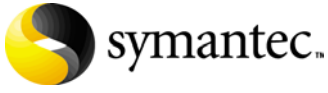
Symantec Enterprise Security Manager™ Security Update 15 User's Guide

Release for Symantec ESM 5.1 and 5.5

NetWare/NDS Modules



Security Update 15 for NetWare/NDS

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Chapter 1

Introducing Security Update 15 for NetWare

This chapter includes the following topics:

- Symantec ESM modules
- User accounts and authorizations
- Networked computer settings
- File Systems and directories

Note: Each chapter in this guide begins with a list such as the one above. In the PDF version, you can click a topic in the list above to go directly to that topic. Similarly, you can click an item in the Contents or Index, or a cross-reference that contains a page number.

Symantec ESM modules

Symantec Enterprise Security Manager (ESM) modules consist of security checks that assess the vulnerability of networked systems to unauthorized access, tampering, and denial of service in three key areas:

- User accounts and authorizations
- Network system and server settings
- File systems and directories

A module is an executable file that examines a server or NetWare/NDS system where a Symantec ESM agent is installed. Each module contains security checks and options that relate to different areas of security.

For example, the Login Parameters module includes checks for excessive login failures, expired passwords, and so forth. Each check examines a specific area of concern such as inactive accounts or password length.

All reports are based on checks and options that you enable.

User accounts and authorizations

The following modules examine user accounts and authorizations for vulnerabilities that could lead to unauthorized access, modification, and tampering. Some of these modules also retrieve information about users and security groups on your systems.

Account Information (Queries) module

The Account Information module reports selected information about user accounts and security groups on your systems. See "Account Information (Queries) module" on page 52.

Account Integrity module

The Account Integrity module reports account policy settings that vary from your security policy. The module examines user accounts and security groups for permissions, home directories, and current statuses. It also creates and maintains user and group snapshot files to detect account changes between policy runs. See "Account Integrity module" on page 56.

Login Parameters module

The Login Parameters module reports old or unused accounts and accounts with expired passwords. The module verifies that accounts are locked out after a specified number of failed login attempts. The module also checks whether the system hides the user ID from the Login dialog box, allows shutdown from a Login dialog box, or permits automatic logins. See "Login Parameters module" on page 64.

Password Strength module

The Password Strength module reports passwords that do not conform to your established security policy. The module applies dictionary tests to detect easily guessed passwords. It also checks the format, length, and expiration of passwords. See "Password Strength module" on page 70.

User Files module

The User Files module reports problems when file ownerships and permissions in NetWare and other systems do not match the original baselines. See "User Files (Queries) module" on page 86.

Networked computer settings

These modules examine network and server settings for vulnerabilities that could lead to unauthorized access, modification, and tampering. They also retrieve information about the systems on the network.

Network Integrity module

The Network Integrity module checks the security of NetWare/NDS, including groups and directory and printer shares. See "Network Integrity module" on page 90.

Object Integrity module

Security checks in the Object Integrity module examine ACL support for changes in ownership, permissions, the logical-name table, rights identifiers, and other software objects or device-specific files in the system device directory. The module also creates and maintains a snapshot file to detect new devices, deleted devices, and device changes between policy runs. See "Object Integrity module" on page 92.

Startup Files module

The Startup Files module examines system startup files, looking for proper configuration of NLMs and server parameters. See "Startup Files module" on page 103.

System Auditing module

System auditing helps you identify unauthorized users and provides valuable tracking information during or after a break-in. See "System Auditing module" on page 116.

File Systems and directories

These modules examine file systems and directories for vulnerabilities that could lead to unauthorized access, modification, and tampering.

File Attributes module

Security checks in the File Attributes module report changes in files such as ownership, size, creation time, and modification. Other reports include changes in access control lists (ACLs), results of checksum checks, and directories that grant full control to the Everyone group. See "File Attributes module" on page 122.

File Access (Queries) module

Security checks in the File Access module report file permissions and users who can access specified files.

To learn how to use the security checks in this module, see "File Access (Queries) module" on page 135.

File Find (Queries) module

Security checks in the File Find module report certain file attributes, settings, uneven permissions, specified text strings, and unowned files.

To learn how to use the security checks in this module, see "File Find (Queries) module" on page 138.

File Information (Queries) module

Security checks in the File Information module report users and their effective or trustee rights to specified directories and files. The module also reports inherited rights masks for selected directories and files.

To learn how to use the security checks in this module, see "File Information (Queries) module" on page 140.

Chapter 2

Installing Symantec ESM security modules

This chapter describes the steps that are required to successfully install Symantec ESM Security Update modules on supported NetWare/NDS servers and resolve connection errors.

This chapter includes the following topics:

- System requirements
- Installing the update
- Registering the modules
- Resolving connection errors

Note: You cannot install Security Update modules on Symantec ESM versions prior to Symantec ESM 4.4.

System requirements

Operating system platforms and Symantec ESM manager and agent core products that can be upgraded with each Security Update release are included in the *Release Notes* that are posted to the Symantec Web site.

Memory and disk space requirements are determined by the requirements for the manager and agent core product that is upgraded by a Security Update. These requirements are summarized by core product versions (Symantec ESM 5.5, 5.1, 5.0.1, and so on) in the *Symantec ESM Operating Requirements* document that is also posted to the Symantec Web site with each new Security Update release.

Both *Release Notes* and *Symantec ESM Operating Requirements* can be downloaded with the Security Updates from the Symantec Web site at http://securityresponse.symantec.com.

Getting the update

Symantec ESM Security Updates are available:

- On the Internet at http://securityresponse.symantec.com.
- On the Security Update CD.

  Two or three times a year, Symantec publishes a set of recent updates on a CD. If you are unable to obtain Security Updates through LiveUpdate and cannot download them from the Symantec Security Response Web site, use the form at the end of this document to order the most recent CD.

Getting ready to install

Before you start installing the modules:

- Make sure that each computer has an installed Symantec ESM agent.
- Prepare a list of all NetWare/NDS computers that have an installed and running agent that needs to be updated.

  Include the names of all manager computers where each agent is registered.

  Include the user name, password, and communication protocol that each agent uses to contact the manager.

  The user name and password must have privileges to register agents on the manager.
- Make sure you can access an account with root privileges on the computers where you plan to install the security modules.

Installing the update

Before you can use modules in a Security Update release, you must install them on the NetWare/NDS servers in your network that have an installed and running Symantec ESM agent.

The ESMMODS.NLM installs the Security Update modules on NetWare 4.x and NetWare 5.x. Use ESMSETUP.NLM to install the Security Updated on NetWare 6.x. To access the installation software, at least one NetWare server must have access to a local CD-ROM drive or a workstation on the network with a local CD-ROM drive.

Note: If this is the first time you are installing Symantec ESM for NetWare/NDS or if you are installing to NetWare 6.x, follow the instructions that are located in the *Symantec Enterprise Security Manager User Manual* for running ESMSETUP.NLM. After you install Symantec ESM for NetWare/NDS, continue reading this section.

You can find the NetWare/NDS ESMMODS.NLM in the following directory on the CD_ROM:

NOVELL\NWNDS\INTEL\ESMSU15

Note: Security Updates can also be downloaded from the Symantec Web site at http://securityresponse.symantec.com.

Mounting the CD-ROM drive

You can mount the CD-ROM drive on the server or a workstation. See the Novell or Microsoft manuals for enabling and accessing the CD-ROM drive.

If the CD-ROM drive is mounted on a file server and you have secured your console, you must comment the “secure console” line from your autoexec.ncf file and reboot your server before you can use the CD-ROM drive to copy files to the server.

If the NetWare server has a CD-ROM drive, you can mount the CD-ROM on the NetWare server and load the Symantec ESM files to a volume directory.

Copying the NetWare/NDS files

If the NetWare server lacks a CD-ROM drive, you can mount the CD-ROM on a Windows workstation and copy the files to the NetWare/NDS server.

To copy the NetWare/NDS files

1. Map an available network drive.
2. Use this command to create a directory for the Symantec ESM files:
   MAP X=SYS:SYMANTEC\ESM\INSTALL
3. Change to the new directory.
4. Use this command to copy the NetWare/NDS files from the ESM directory on the CD-ROM to the intended directory on the mapped network drive:
   COPY <CDROM_drive>:\NOVELL\NWNDS\INTEL\ ESMSU.* <MAPPED NETWORK DRIVE>**

Note: If you are downloading this Security Update from Symantec's web site, you can also unzip the .ZIP file from the web directly onto the NetWare/NDS server.

Installing the security update

Use the ESMMODS.NLM program to install the Symantec ESM Security Update. In large networked systems, you can install the Security Update by copying the file to a local NetWare server running a Symantec ESM 5.1 or 5.5 manager/agent.

To install the security modules

1. From the NetWare console (or using RConsole), enter this command at the NetWare prompt:
   LOAD[VOLNAME]:\NOVELL\NWNDS\INTEL\ESMSU<#> \ESMMODS.NLM
   where volname represents the name of the NetWare volume that contains the transport medium.
2. Type **1** and press **Enter** to begin the installation (or press **Enter** to choose the default).
3. Type **1** and press **Enter** to perform the Basic installation.
4. Type the complete path name of the directory where the Symantec ESM files should be installed and press **Enter**.
5. Type the name of the Symantec ESM manager and press **Enter**.

6. Type **1** to select the SPX network protocol or **2** for TCP and press **Enter**.
7. Type the port number to be used to contact the manager and press **Enter**.
8. Type your Symantec ESM manager user name and press **Enter**.
9. Type a password and press **Enter**.

Note: Type **UNLOAD ESMMODS** from the console if you need to stop the installation before it is completed.

Registering the modules

Each time you run a Security Update, you will be asked if you want to reregister the module and .m files. You need to register the files only once for each manager. If an agent is registered to multiple managers, rerun the Security Update on the agent to register the modules with each manager.

To reregister each module to any other previously-registered manager, use ESMSETUP.NLM.

Do not register different versions of Symantec ESM agents to the same manager. This can cause manager database errors.

Although agents that were registered to a manager before it was upgraded continue to function with the manager after the upgrade, you should upgrade agents to the same version as the manager

Resolving connection errors

If you get a connection error while running security checks, check the \esm\config\manager.dat file on the agent.

To resolve connection errors, add the manager's fully-qualified name to the file. If the file is missing, run ESMSETUP.NLM to reregister the agent to the manager.

Chapter 3

Reviewing policies, modules, and messages

This chapter includes the following topics:

- Reviewing policies
- Reviewing modules
- Reviewing messages

For additional information, see your *Symantec Enterprise Security Manager User Manual*.

Reviewing policies

A policy is a set of modules with enabled security checks that look for security vulnerabilities.

Symantec ESM is installed with seven default policies. Best practice policies can be downloaded through LiveUpdate or from the Internet. Policies for application products are sold separately.

Implementing best practice policies

Symantec ESM best practice policies are configured to protect specific applications and/or operating system platforms from security vulnerabilities.

Operating system (OS) hardening policies incorporate Symantec security research based on ISO 17799 and other industry standards and best practices. OS policies can be used in place of the Symantec ESM Phase 1, 2, and 3 default policies.

OS policies are configured by Symantec with values, name lists, templates, and word files that apply to targeted platforms. They use Security Update modules and templates to check OS patches, password settings, and other vulnerabilities on the operating system. They may also introduce new templates and word lists to examine conditions that are required by supported standards or regulations.

Maintenance-paying Symantec ESM customers can download OS Policies without charge through LiveUpdate or at the Symantec Security Response Web site: http://securityresponse.symantec.com.

Responding to incidents

Maintenance-paying Symantec ESM customers can download Response policies for specific security incidents such as Code Red 2 and Nimda without charge at the Symantec Security Response Web site: http://securityresponse.symantec.com.

Creating and editing your own policies

Creating and editing Symantec ESM policies requires Create New Policies and Modify Policy access rights. See "Assigning access rights to manager accounts" in your *Symantec Enterprise Security Manager User Manual*.

You can create a new policy from scratch (add) or copy (duplicate) an existing policy. After creating a policy, edit it to add or delete modules that the policy runs when it executes.

Warning: The manager does not keep multiple copies of policies with the same names. If users on different consoles add different policies with the same names, the latest version of the new policy overwrites all prior versions.

To add a new policy

1. In the console tree, do one of the following:
   - Right-click a manager, then click **New** > **Policy**.
   - Right-click **Policies**, then click **New Policy**.
2. Type a new policy name of not more than 31 characters.
3. Press **Enter**.

To duplicate a policy

1. In the console tree, right-click a policy, then click **Duplicate**.
2. Type a new policy name of not more than 31 characters.
3. Press **Enter**.

To edit a policy

1. In the console tree, double-click the policy that you want to edit.
2. Edit the name lists:
   - In the Available Modules list, click the module that you want to add to the policy, then click the left arrow.
   - In the Current Modules list, click the module that you want to remove from the policy, then click the right arrow.
3. Click **OK**.

To rename a policy

1. In the console tree, right-click a policy, then click **Rename**.
2. Type a new policy name of not more than 31 characters.
3. Press **Enter** or click **OK**.

To delete a policy

- In the console tree, right-click the policy, then click **Delete**.

  The manager must have the Modify Policy access right.

  You cannot delete a policy when more than one Symantec ESM Enterprise Console is connected to the manager.

  To delete report files that are associated with the policy, delete the \reports\<policy> subdirectory in the manager's ESM folder.

Sample policies

Seven sample policies are shipped with Symantec ESM. After installing Symantec ESM, make copies of the sample policies, then rename and edit the copies to implement your company's security policy.

Phase policies

Five phase polices let you begin with the most basic security issues and resolve any weaknesses before proceeding to the next level of complexity.

Phase policy modules are described in chapters 4–6. The policies are:

- Phase 1 includes:

  "File Access (Queries) module" on page 135
  "File Find (Queries) module" on page 251.
  "Login Parameters module" on page 64
  "Password Strength module" on page 70.
  "Startup Files module" on page 103.
  "User Files (Queries) module" on page 86.

- Phase 2 includes all modules in Phase 1, with more security checks enabled, plus:
  "Account Integrity module" on page 56
  "File Attributes module" on page 122.
  "Network Integrity module" on page 90
  "Object Integrity module" on page 92.

Phase 3 policies let you apply different standards to various networks or computers, such as Relaxed for development or testing, Cautious for production, and Strict for sensitive areas such as finance or strategic planning.

- Phase 3:a Relaxed includes all modules in Phase 2, with more security checks enabled.
- Phase 3:b Cautious includes all modules in Phase 3:a, with more security checks enabled.
- Phase 3:c Strict includes all modules in Phase 3:b, with more security checks enabled.

Queries policy

The Queries policy reports account information and file permissions. Two modules—File Watch and User Files—are used in both Phase and Queries policies. Queries policy modules are described in the following sections:

- "Account Information (Queries) module" on page 52.
- "Discovery (Queries) module" on page 128 [where?]
- "File Access (Queries) module" on page 135
- "File Find (Queries) module" on page 138
- "File Information (Queries) module" on page 140
- "User Files (Queries) module" on page 86

Copying and moving policies

Copying policies ensures that policies are identical on multiple managers.

Moving policies removes a policy from one manager and adds it to another, overwriting any policy-related information on the destination manager.

Copying and moving policies requires the Create New Policies access right. See "Assigning access rights to manager accounts" in your *Symantec Enterprise Security Manager User Manual*.

To copy a policy to another manager

- In the console tree, drag and drop a policy on a destination manager.
  You can also right-click a policy, drag and drop it on a destination manager, then click **Copy**.

To move a policy

1. In the console tree, drag the source manager policy and drop it on the destination manager.
2. Click **Move**.

Running policies

To run a policy

- In the console tree, do one of the following:
  - Drag and drop your policy on the agent or domain.
  - Drag and drop your agent or domain on the policy.

Demonstrating security checks

Before you apply a new security check to your systems, create a demo policy and add the check to it. Then verify the check on a representative computer. By using a demo policy, you can obtain results without disturbing the settings of policies that are created and named by the Symantec Security Response team.

Delete the demo policy after you complete your demonstrations.

Reviewing modules

A module is a set of security checks and options that looks for security vulnerabilities and reports messages in the console grid.

Enabling and disabling security checks

Only enabled checks provide information when you run a policy.

Note: Symantec best practice and response policies and modules cannot be directly edited. First make a copy of the policy or module, then rename the copy. You can then edit the renamed copy.

To enable and disable checks

1. Expand the Policies and module branches in the tree view:
2. Do one of the following:
   - Double-click the NetWare/NDS icon.
   - Right-click the NetWare/NDS icon, then click **Properties**.
3. Check or uncheck the appropriate check box.

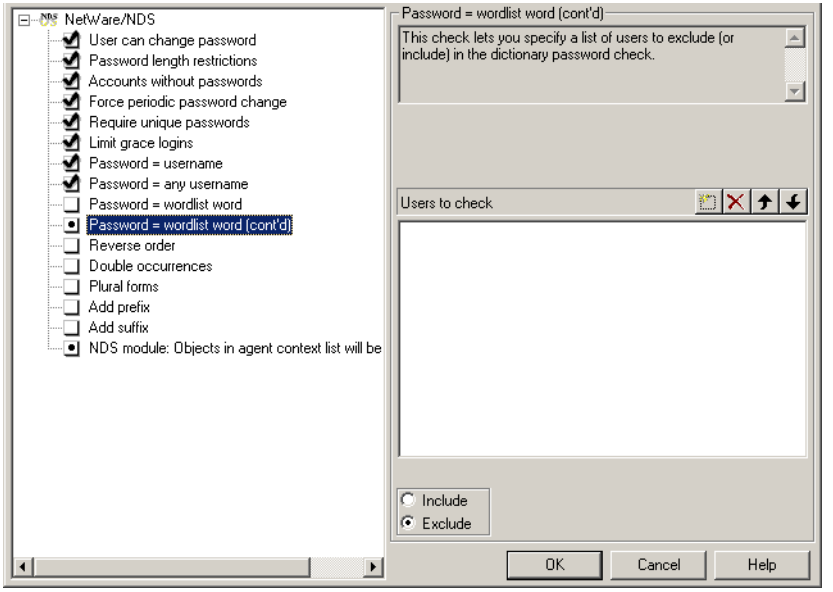
Specifying options

You control the behavior of security checks by specifying options. For example, in the Password = wordlist word (cont'd) option of the Password Strength module, you specify which users you want the checks to examine or skip in the dictionary password check. This option is permanently enabled, as indicated by the dot in the box.

Other options, such as Match abbreviated names in template, are selectable. You select or uncheck these options to turn them on or off.

To display option items, click Password = wordlist word (cont'd) on the left side of the window. In the name list panel, specify the users to include or exclude when you run the module. When applicable, check one of the boxes to define whether entries will be included or excluded.

Figure 3-1 NetWare/NDS Password Strength editing window



Name lists are the most common items that are available for editing in options. Other items include check boxes to turn an option on or off, and text string values, where you can specify parameters such as the minimum number of non-alphabetic characters that are required in a password.

A description of the option is displayed in the upper right area of the module editing window.

Editing name lists

Use the name lists in the module editing window to specify items that you want to include or exclude when you run a module or security check.

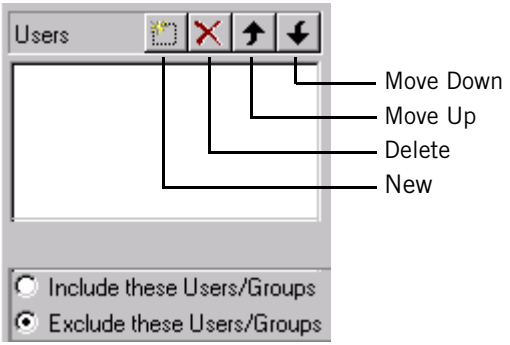
Table 3-1 Name list types

Type	Contents
Users	User accounts, such as user1 and user2
Groups	User account groups such as system operators and administrators
Files/directories	Files or directories such as c:\program files\symantec\esm\bin
Enabled/disabled word files	Word files containing groups of words
Enabled/disabled templates	Template files
Key (words)	Sets of keys or keywords
Generic strings	Sets of generic character strings

Most name list panes contain:

- New, Delete, Move Up, and Move Down buttons
- List area
- Include and Exclude buttons

Figure 3-2 Name list pane



Objects in name lists

A single name list can have a mix of users, groups, organizational roles, and Containers. Always refer to objects by their fully distinguished names, such as user1.department.region.company.

Object names must not have leading dots or type tags.

Note: You can use question marks (?) and asterisks (*) as wildcard characters in the name lists.

You can specify a search level on a Container object, for example department1.region.company+2. ESM uses this value to determine the search level for the object.

Table 3-2 Object search depth values

Value	Result
blank	searches the object and all levels of children
+0	searches the object only, no children
+1	searches the object and one level of children
+n	searches the object and “n” levels of children

- A leaf object can be a user or its equivalent.
- A group object consists of the object and its members.
- An organizational role includes the object and its occupants.
- A Container consists of the Container and its subordinates.

To add an item to a name list

1. Click **New**.
2. Type the item name.
   You can use the asterisk (*) character as a wildcard character to represent a set of items in a name list. For example, \usr\myapp* specifies all files in the \usr\myapp directory.
   To add another item, press **Enter**, then repeat steps 1–2.
3. Click **Include** or **Exclude** to indicate whether to examine or skip the listed items.
4. Click **OK**.

To remove an item from a name list

1 Click the item.

2 Click **Delete**.

3 Click **OK**.

To move an item up or down in a name list

1 Click the item.

2 Click **Move Up** or **Move Down**.

3 Click **OK**.

Users and Groups name list precedence

When a security check contains Users/Groups name lists, the check processes the names in the Groups list first. Then, within each selected group, it processes the names in the Users list. This table summarizes the results that you can expect from name lists that include or exclude Users or Groups entries:

Table 3-3 Single Users and Groups list results

If the check	And the users list	And the groups list	Then the check reports
Includes a users or groups name list	Contains user entries	Is blank	Data for all reported users
Includes a users or groups name list	Is blank	Contains group entries	Data for all reported groups and users that are in them
Excludes a users or groups name list	Contains user entries	Is blank	Data for all groups and users except the reported users
Excludes a users or groups name list	Is blank	Contains group entries	Data for all groups except the reported groups and users that are in them
Includes or excludes blank name lists	Is blank	Is blank	Data for all groups and users

Table 3-4 Objects include and exclude lists

If the check	Object list	Then the check reports
Includes NDS objects	Contains a list of NDS objects	Data about each listed object and its equivalents
Includes NDS objects	Is blank	Data about any NDS object or its equivalents
Excludes NDS objects	Contains a list of NDS objects	Data about all objects and their equivalents, except the listed objects and their equivalents
Excludes NDS objects	Is blank	Data about all of the objects and their equivalents

Some modules have Users to check options with name lists that are used by more than one security check. Some of the security checks that use the Users to check name lists also have their own name lists.

When a security check uses two Users and Groups name lists, the check processes the combined contents of these name lists as follows:

Table 3-5 Multiple Users/Groups list results

If the Users to check option	And the check name lists	Then the check reports
Includes user or group entries	Include user or group entries	Data about all groups and their users, and all users, in both user lists
Includes user or group entries	Exclude user or group entries	Nothing about groups and users in the check name lists (exclude entries override include entries)
Excludes user or group entries	Include user or group entries	Nothing about groups and users in Users to check name lists (exclude entries override include entries).
Excludes user or group entries	Exclude user or group entries	Nothing about groups and users that are in the name lists
Includes or excludes blank name lists	Include or exclude blank name lists	Data for all groups and users

Using an alias in a name list

Symantec ESM uses aliases to make the contents of the name lists language independent. An alias is equivalent to and can be used interchangeably with an object name in another language.

Symantec ESM uses the %<account names>% format for aliases. As an example, on a system running in French that has %PRIVILEGED% in a name list, Symantec ESM can process the French equivalent of PRIVILEGED in the security check.

Symantec ESM can only process these aliases. Use the actual fully distinguished name of the NetWare Server object in the appropriate language for all other cases.

Table 3-6 Alias names for NetWare/NDS users and groups

Objects	Description
%DISABLED%	Any user object that is disabled by an Administrator
%PRIVILEGED%	Any object with super rights to the part of the tree that is being checked
%TYPE:<NDS object>%	Any NDS class in a name list that contains NDS objects. For example, you can use %Type:users% for all users, %Type:organizations% for all organizations, %Type:queues% for all queues, %Type:directory maps% for all directory maps, etc. In addition to NDS classes, you can use %TYPE:Container% for all Container objects or %TYPE:leaf for all non-Container objects. Case is not important; %tYpe:GrouP% and %TYPE:GROUP% are equivalent. Note that non-NDS objects such as files, keywords, templates, or word files do not apply.

Creating and editing templates

A template is a file that contains module control directives and definitions of objects with their expected states.

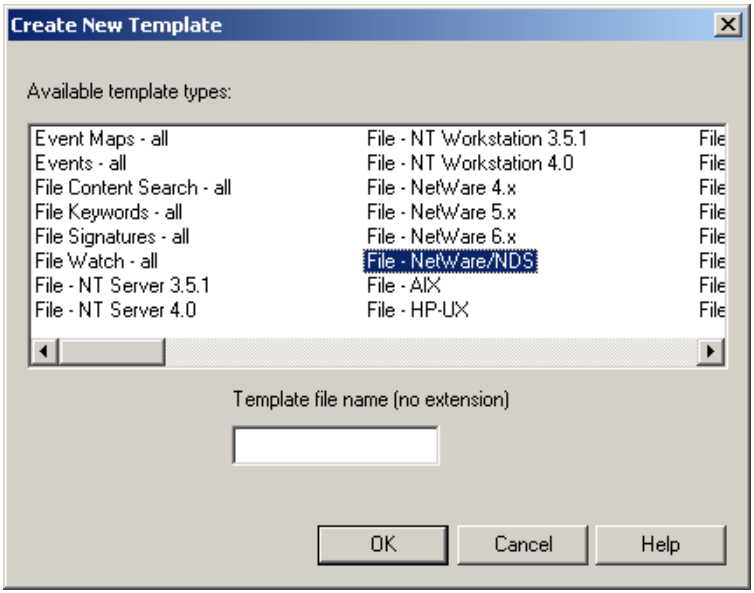
The following NetWare modules use templates:

- Account Integrity
- File Attributes
- File Find (Queries)
- File Watch
- Network Integrity
- OS Patches
- Startup Files
- System Auditing

Creating a template

To create a template

1 In the Symantec ESM console tree, right-click **Templates**, then click **New**.



2 Select an available template type.

3 Type a name for the template without a file extension. Symantec ESM provides the extension based on the template type that you select.

4 Click **OK**.

Your new template will be listed in the Templates branch of the console with other template files that use the same file extension.

Editing template rows

If you edit any of the templates that are shipped with Symantec ESM, your changes will be overwritten by the next Security Update. To avoid this problem, create and edit your own templates.

To edit a template, open it in the Template Editor, add and delete rows, and specify the contents of columns in each row.

To open a template in the Template Editor

1 In the console tree, expand the Templates branch.

2 Double-click the template that you want to open.

The Template Editor organizes templates into rows and columns. Each row describes a single file, patch, or other item. Columns, also called fields, contain the information that Symantec ESM attempts to match with agent settings.

Figure 3-3 Template Editor rows and columns

	OS/Rev	File/Directory to watch	Depth	Ownership	Permissions	Signature	New	Removed	Excludes
1	1	c:\	All	☑	Both	MD5	☑	☑	0
2	1	d:\	1	☐	Modified	None	☑	☑	1

To add a template row

1 Open a template in the Template Editor, then click **Add Row**.

2 Specify row information, including any sublist information needed.

3 Click **OK** to save the row.

4 Click **Close** to exit the Template Editor.

To remove one or more rows

1. In the Template Editor or Sublist Editor, click the leftmost, numbered button of the row that you want to remove.
   - For a range of rows, hold down the **Shift** key while you click the first and last row numbers.
   - For multiple non-sequential rows, hold down the **Ctrl** key while you click the row numbers.
2. Click **Remove Rows**.
3. Click **Save**.
4. Click **Close** to exit the editor.

Editing template fields

In the Template Editor, you can:

- Change the contents of a string or numeric field.

  String fields can contain free-form text. Examples of string fields include Directory/File Name, User, Group, and Permissions fields in the File template.

  Figure 3-4 String fields

Directory/File Name	Owner
SYS:LOGIN\ATTACH.BAT	%SERVER%
SYS:LOGIN\CMPQ_RUN.OVL	%SERVER%
SYS:LOGIN\CX.EXE	%SERVER%

  Note: For templates only, you can enter %SERVER%, %PRIVILEGED%, or the actual, distinguished name of a user object.

  Numeric fields can contain positive or negative integers or real (floating point) numbers. An example of a numeric field is the Severity field in the Patch template.

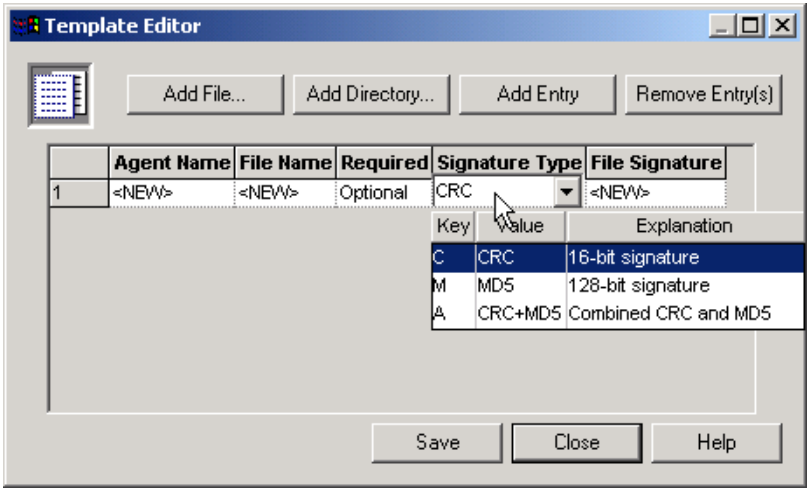
- Check or uncheck a check box.

  Check boxes direct the module to examine specific items, such as the New and Removed check boxes in the File Watch template.

- Select a context menu option.

  Context menus include Signature fields in File and File Watch templates and Signature Type fields in File Signatures templates.

Figure 3-5 Context menu



- Edit a sublist.

  Sublist fields display the number of items in the sublist (initially, 0). For example, the Permissions ACL columns in File templates. Click a numbered sublist button (not a row number) to access the Template Sublist Editor.

Figure 3-6 Sublist buttons

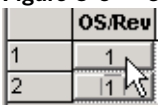
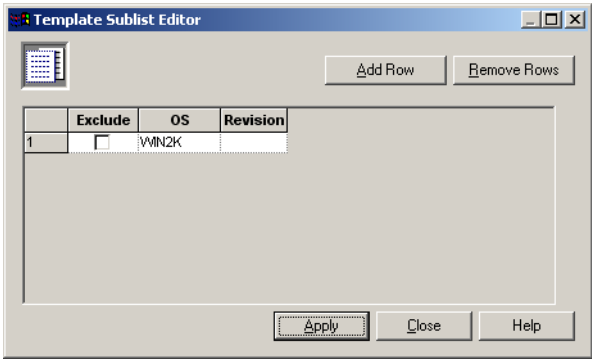


Figure 3-7 Template Sublist Editor



Edit sublist rows in the Template Sublist Editor the same way that you edit template rows in the Template Editor.

Reviewing messages

Messages consist of:

- A message name, in all caps. Message names link Symantec ESM code to the text of the message title and must not be changed. Message names appear only in .m files.
- A message title, in upper and lower case, that is displayed in the console grid. You can edit message titles in .m files. See "Editing messages" on page 48.
- Message text, in upper and lower case text, that is displayed in a separate window of the summary report when you move the mouse over the Message field in the console grid. You can edit message text in .m files. See "Editing messages" on page 48.
- Class (0–4). Class 0 displays a green message (no action needed), classes 1–3 display yellow messages (need attention), and class 4 displays a red message (needs immediate attention).
- Some messages display a code in the Updateable/Correctable field of the console grid that identifies the message as template-updateable (TU) or snapshot-updateable (SU). You can click the code to update the template or snapshot file to match the current agent settings. See "Updating template and snapshot files in messages" on page 47.
- Some messages also display a code in the Updateable/Correctable field that identifies the message as correctable (C). You can click the code to reverse agent settings or disable a vulnerable account. See "Correcting agents in messages" on page 46.

Most messages are reported in the console grid, though some common messages are reported in a separate window.

Reviewing message types

Symantec ESM reports four types of messages:

- Common messages, available to all modules, report Symantec ESM operational information such as Correction succeeded, Disk write error, etc.
- Correctable messages can be used to reverse current agent settings.
- Updateable messages can be used to change template or snapshot settings to the current agent settings.
- Informative messages report administrative information such as lists of user accounts, or security vulnerabilities that require manual adjustments.

Reviewing common messages

Several messages that report system conditions are stored in the esm\register \<architecture>\common.m file. Some of these common messages are displayed in the console grid, others in separate windows.

The following messages can be generated by more than one module.

Table 3-7 Common messages

Message	Title	Class
CANCELED	Module execution canceled by user	4
CORRECT_FAIL	Correction failed	0
CHECK_NOT_ PERFORMED	Warning - check could not be performed	1
CORRECT_SUCCEED	Correction succeeded	0
DISK_WRITE_FAIL	Disk write error	0
EOF	End of file	0
FEATURE_NOTSUP	Module feature not supported	0
HEADER	No problems found	0
INTERNAL	ESM internal error, please report to Symantec technical support	4
LOCUNKNOWN	Location of user's home directory is unknown	0
NDS_CONTEXTS_CONSIDERED	NDS context(s) considered against server resources	0
NDS_CONTEXTS_CHECKED	NDS context(s) checked	0
NOMEM	Failed to allocate memory	4
NOMEM_NLM	Failed to allocate memory	4
NO_NDS_CONTEXTS_CHECKED	No NDS context checked	0
NOTE	Please note the following	0
NOUSER	No such user on system	0
NOWORDS	No word files specified	4
NOCHKUSER	User not checked	0
NW_BINDERY_ON_NDS	Running ESM for NetWare 3.x on NetWare 4.x	1
REMOTEHOME	User's home directory is on a remote mount	0

Table 3-7 Common messages

Message	Title	Class
QUERYRESULT	Query Results	0
SNAPSHOT_CREATED	Snapshot created	4
SU_FAILED	Substitute User function failed (UNIX only)	0
SYSERR	Unexpected system error	4
TEMPLATE_ITEM	Template item	0
TEMPLATE_SUBLIST	Template sublist item	0
TOOMANYERR	Too many report records, please correct problems and rerun	4
UPDATE_FAIL	Update failed	0
UPDATE_SUCCEED	Update succeeded	0
UNEXPFMT	Unexpected file format	1
UNSUPPORTED	Not supported on this operating system	0

Correcting agents in messages

Correctable messages display a C in the Updateable/Correctable field of the console grid.

You can use the Correct feature to correct agent rights or settings. For example, in the Account Integrity module, the Generate security audits check reports accounts with rights to generate entries in the security log. If you correct a reported user account, the right is revoked. You can restore the right by repeating the same process that you used to revoke it.

You can also use the Correct feature to disable a vulnerable account. In the Password Strength module, for example, you can immediately disable a reported account that has no password.

To correct the agent reported in the console grid

1. In the console grid, right-click an item that contains C in the Updateable/Correctable field, then click **Correct**.
2. Type the name and password of a user that has the right to change the setting.
3. Click **OK**.

To reverse a correction, use the same procedure. Except in step 1, right-click an item that contains Corrected in the Updateable/Correctable field, then click **Correct**.

Updating template and snapshot files in messages

Some modules use template files that specify authorized settings. When you run a module with enabled checks that examine these settings, discrepancies are reported with a TU code in the console grid.

Similarly, some modules use snapshot files that contain settings that were found the last time the module was run. (The snapshot file is created when you run the module for the first time. Changes are detected in subsequent policy or module runs.) Settings that do not match the snapshot file are reported with an SU code in the console grid.

To update a template or snapshot file in the console grid

1. Right-click **TU** (or **SU**) in the Updateable/Correctable field.
2. Click **Update Template** (or **Update Snapshot**).

Editing messages

Messages are contained in module initialization files, called .m (dot-m) files. The .m file of each module:

- Specifies security checks and options for the module.
- Associates the module with specified name lists.
- Contains a descriptive name for the module.
- Supplies default values for the module's security checks.
- Supplies message text that is reported in the console grid.

During agent registration, the current version of each .m file is stored in the manager database at esm\system\<system name>\db. You can specify the location of .m files on each agent.

.m files contain ASCII text. Some lines begin with directives—words that are preceded by a period (.)—that classify file information. Directives are usually followed by data and sometimes by descriptive text.

Messages start with .begin directives, which always occur after information about security checks, options, and templates. Do not delete or reorder any messages.

To edit messages

1. Select an agent with an operating system that reports messages that you want to edit.
2. Open the common.m file or <module>.m file in a text editor.
3. Edit the following directives as needed:

Directive	Description
.title	Brief description of a security problem, in quotation marks, not exceeding 79 characters. For example: .title "Maximum password age too high" The description is displayed in the console grid when the module is run.

Directive	Description
.class	Severity of the problem, 0–4. For example: .class 2 0 = Green message (no action required) 1 = Yellow message (deserves attention) 2 = Yellow message (deserves attention) 3 = Yellow message (deserves attention) 4 = Red message (deserves immediate attention)
.text	Explanation of the problem. Lines of text cannot exceed 128 characters, and the total explanation cannot exceed 1023 characters. Begin text on the line after the .text directive. Include: ■ Nature of the problem. ■ Why it is a security risk. ■ How to remedy the problem. The .endtext directive should occur on a line by itself after the text (required even if you omit an explanation). For example: .text The maximum password age is set too high. Infrequent password changes allow anyone with a stolen password long term access to your system. Set the maximum password age to 60 days. .endtext **Note:** Do not begin a line of text with a period. This character is used as a control delimiter and improper usage causes the module to fail.

4 Change the .customized directive value of each modified message to 1.

This prevents the edited message from being overwritten when the module is updated to a later version.

5 Increment the module version number in the .module directive by 1. In the following example, 1700 was the last version number:

.module “Account Information” accountinfo 1701 NetWare/NDS

6 Save the edited .m file.

7 Reregister the module with appropriate managers.

8 Verify that the modified messages appear in the message.dat file in the default location on the manager computers.

System	Directory
NetWare	Symantec ESM creates a symbolic link: \esm\system\<system name>\db\message.dat [VERIFY!!]

Chapter 4

Checking user accounts and authorizations

This chapter includes the following topics:

- Account Information (Queries) module
- Account Integrity module
- Login Parameters module
- Password Strength module
- User Files (Queries) module

These modules check user accounts and authorizations for unauthorized access, modification, and tampering. They also retrieve information about the accounts on a system.

This chapter also lists the messages that are returned by individual security checks. For common messages that are returned by multiple security checks, see "Reviewing common messages" on page 45.

To learn how to use name lists, see "Editing name lists" on page 35.

Account Information (Queries) module

The Account Information module reports information about user and group accounts on the system. User information includes group memberships, security equivalents, trustee assignments, and effective rights. Group information includes members.

User information

This check reports information such as Full Name, Security Equals, Group Memberships, E-mail Address, Last Login Time, and Organizational Unit for users in the agent context list. Reported Group names are Distinguished Names.

You can use the check's name list to exclude or include specific users for the check. You can also select the attributes that are reported for each user from keyword lists in the User information (cont'd) option.

The check returns the following messages:

Table 4-1 User information messages

Message	Title	Class
USER_INFORMATION	User information	0
NO_SEL_ATTRS	No attributes selected for User information	4

This check provides information and does not require any security action. If the check returns the No attributes selected message, select at least one attribute using the User information (cont'd) option, and rerun the policy.

User information (cont'd)

This option lets you enable or disable the keywords for user attributes that are reported by the User information check. View the keywords by selecting this option in the Symantec ESM console.

Group membership

This check lists all users that are members of specified groups in the agent's context. Use the name list to specify the groups that are excluded or included in the check. Individual user names in the name list are ignored.

The check returns the following message.

Table 4-2 Group membership message

Message	Title	Class
GROUP_MEMB	Group membership	0

Each member of a group inherits the group's rights to the file system and NDS objects.

For optimal security, review each group member to determine whether the user actually requires all of the access that is provided by membership in the group.

Security equivalences

This check reports user accounts with security equivalences and lists the equivalent accounts for each account that is reported. Use the name list to specify the user accounts that are excluded or included in the check.

The check returns the following message:

Table 4-3 Security equivalences message

Message	Title	Class
SECURITY_EQU	User security equivalence	0

A security equivalent may access and modify all files, including login scripts and NDS objects. If Administrator equivalence has been granted, the account will have access to all system resources and be able to modify all files in a context.

For optimal security, review each account to verify that it should be the security equivalent of the listed account. Use caution in granting Administrator equivalence.

Account login status

This check lists user accounts with the corresponding login status. Reported login statuses include:

- Active accounts with a recent user login
- Inactive accounts that have not had a user login for the number of days specified as the Days since last login value
- Unused accounts that have never had a user login
- Locked accounts that have been locked by Intruder Detection
- Disabled accounts that have been disabled by an administrator

You can edit the default value for Days since last login to control which accounts are reported as active and inactive. Use the name list to specify user accounts to be excluded or included in the check.

The check returns the following messages:

Table 4-4 Account login status messages

Message	Title	Class
LOGIN_ACTIVE	Active user account	0
LOGIN_INACTIVE	Inactive user account	0
LOGIN_UNUSED	Unused user account	0
ACCOUNT_LOCKED	User account locked by intruder	0
ACCOUNT_DISABLED	Disabled user account	0

Inactive, unused, and disabled accounts can pose security risks. A locked account could be nothing more than a user who forgot a password, but it could also indicate a brute force attack.

For optimal security, determine why inactive or unused accounts are not being actively used. In general, remove or disable unused accounts.

Directory trustees

This check lists trustee assignments for directories. Use the name list to specify the users and user groups to be excluded or included in the check.

You can also use the Directory trustees (cont'd) option to specify the volumes that the check examines. The report length varies according to the number of volume names that are examined by the check.

The check returns the following messages:

Table 4-5 Directory trustees messages

Message	Title	Class
VOL_NOT_AVAIL	Volume not available	4
DIR_TRUSTEES	Trustee assignments	0

A volume that has been dismounted for repairs, or one that is removable such as a CD-ROM, will not be available for Symantec ESM checks.

In general, this check provides information and does not require any security action on your part. However, for optimal security, review each account to verify that the directory trustee access is correct.

Directory trustees (cont'd)

Use this option to specify the distinguished names for volumes that you want the Directory trustees check to examine.

NDS module: Objects in agent context list will be considered

NetWare/NDS modules are divided into two categories:

- NDS module checks for security problems involving NDS object
- Server module checks for security problems involving server resources

NDS modules are given a list of NDS contexts to check at installation. These can be changed with the ESMSETUP.NLM setup program.

This module checks only the parts of the tree that are listed in the agent context list of each NetWare/NDS agent where the module is run.

Account Integrity module

The Account Integrity module checks user account information and NetWare account settings to identify account privileges and settings that exist outside of the established security policy.

Updateable Account Integrity messages

The NetWare Account Integrity module has two security checks that return snapshot-updateable messages.

Snapshot-updateable messages let you update snapshots to match current values for the agent system. These messages display the letters SU in the Updateable/Correctable column of the console grid.

Run the module once to create the agent snapshot file before you run the module to look for security weaknesses.

Table 4-6 Updateable Account Integrity messages

Security check	Code	Message name
New, changed and deleted users	SU	SNAP_USER_SECEQUAL
New, changed and deleted users	SU	SNAP_USER_GROUP
New, changed and deleted users	SU	SNAP_USER_EQUIVALENCE
New, changed and deleted users	SU	SNAP_USER_GONE
New, changed and deleted users	SU	SNAP_USER_NEW
New, changed and deleted groups	SU	SNAP_GROUP_MEMBER_NF
New, changed and deleted groups	SU	SNAP_GROUP_GROUPMEM
New, changed and deleted groups	SU	SNAP_GROUP_MISSING
New, changed and deleted groups	SU	SNAP_GROUP_ADDED

Accounts without expiration dates

This check reports user accounts that do not have expiration dates. Use the name list to exclude or include specific accounts in the check.

The check returns the following message:

Table 4-7 Accounts without expiration dates message

Message	Title	Class
ACCOUNT_EXPIRES	User account without an expiration date	2

Accounts without expiration dates can exist indefinitely.

For optimal security, do not allow accounts to exist indefinitely. User accounts that remain valid longer than needed can provide an opportunity for an intruder to access the Directory/Organizational tree.

Expiration time

This check reports user accounts with expiration time periods that exceed the period specified in your policy. The default value is set to 30.

Use the name list to exclude or include specific user accounts for the check.

The check returns the following message:

Table 4-8 Expiration time message

Message	Title	Class
ACCOUNT_LONG_LIVED	User account with long expiration time	1

Accounts without expiration dates can exist indefinitely.

For optimal security, set an account expiration time, especially for short term or temporary accounts. User accounts that remain valid for longer than needed can provide opportunities for unauthorized users to access the Directory/ Organizational tree.

Accounts without login time restrictions

This check reports user accounts without any login time restrictions. Use the name list to specify user accounts that are excluded or included in the check.

The check returns the following message:

Table 4-9 Accounts without login time restrictions message

Message	Title	Class
NOTIMERESTRICT	User account without login time restrictions	1

Workstations logged into the network, and left running overnight and weekends, create a security risk.

For optimal security, impose time restrictions that improve the integrity of scheduled backups and that prevent users from leaving their workstations logged in for multiple days.

Accounts with common names

This check reports user objects with easy to guess names (such as ADMIN and GUEST). Use the name list to specify the names that are checked. Use the Accounts with common names (cont'd) option to specify the user, group, and Container objects that are excluded or included in the check.

The check returns the following message:

Table 4-10 Accounts with common names message

Message	Title	Class
COMMON_NAME	User account has a common name	1

User accounts with common names can be easily guessed and may create a security risk. Rename these objects using less common names.

Accounts with common names (cont'd)

Use this option to specify the user, group, and Container objects that are excluded or included from Accounts with common names check.

Accounts without home directory

This check reports user objects without assigned home directories.

The check returns the following message:

Table 4-11 Accounts without home directory message

Message	Title	Class
NO_HOMEDIR	User account has no home directory	0

The check provides information. No action is required.

Accounts with access to other home directory

This check reports user objects with unexpected access to other home directories.

The check returns the following message:

Figure 4-1 Access to other home directory message

Message	Title	Class
HOMEDIR_ACCESS	User account has access to another user's home directory	1

For optimal security, review the information that is provided by this check to verify that all access to other users' home directories is authorized.

Other than Symantec ESM, there is no efficient way for you to immediately identify accounts that have access to other home directories. You could launch NWAdmin or ConsoleOne and manually review the effective rights for a directory or volume, or you could simply search through each directory to identify effective trustees.

New, changed, and deleted users

This check reports any changes to user accounts and security equivalences that have occurred on the network since the last recorded snapshot update.

The check identifies the following conditions on the network:

- Account security equivalences that have been added or removed since the last snapshot update
- User accounts that have been added or removed since the last snapshot update
- User account snapshots that are not found by the agent

  A new snapshot will be created by Symantec ESM using the current server information
- Errors reading from the user snapshot file (sifuser.dat)

The check returns the following messages:

Table 4-12 New, changed, and deleted users messages

Message	Title	Class
SNAP_USER_ SECEQUAL	Account security equivalence removed	0
SNAP_USER_ EQUIVALENCE	Account security equivalence added	1
SNAP_USER_GONE	User account removed	0
SNAP_USER_NEW	User account added	1
USER_READING_DATABASE_SSTS	Error reading records from database [sifuser.dat]	4
SNAP_NEW_USER_SNAPSHOT	New user account snapshot file	0

This check reports changes to your system since the last time you ran Symantec ESM. These changes may be evidence of tampering. If Symantec ESM finds changes that are suspicious, examine your network for other evidence of tampering. If these changes were authorized, update the snapshot to prevent this message from being generated in the future.

Errors may indicate that the snapshot file (i.e., the sifuser.dat file) is corrupted. If the snapshot file is corrupt, you can run CIFFIX to attempt a data repair or you can delete the snapshot file and recreate it by running the module without it.

This check does not examine NDS settings.

The sifuser.dat file is initialized the first time this module is run on the agent system. Initialization consists of reading the current state of the system, essentially taking a picture of it, and storing that picture in the snapshot file. Later, Symantec ESM compares the system's current state to the one recorded in the snapshot file and reports any differences.

Changes are noted in the report as potential security problems. For example, if you have added a new user since you last ran Symantec ESM, and have selected this check, you will be notified of that addition in the security report. The Name field displays the full context name of the new user, and the Title field displays User Account Added.

New, changed, and deleted groups

This check compares current group parameters with group parameters that are stored in the group snapshot file (sifgroup.dat) for the agent system and reports any changes to group accounts since the last snapshot update.

The check reports the following group account conditions:

- Group accounts with added or removed user objects since the last recorded snapshot update
- Group accounts that have been added or removed since the last snapshot update
- Group account snapshots that are not found by the agent

  A new snapshot will be created by Symantec ESM using the current server information.
- Errors reading from the sifgroup.dat snapshot file

The check returns the following messages:

Table 4-13 New, changed, and deleted groups messages

Message	Title	Class
GROUP_READING_DATABASE_SSTS	Error reading records from sifgroup.dat file	4
SNAP_GROUP_ GROUPMEM	User accounts added to group	1
SNAP_GROUP_ADDED	Group account added	1
SNAP_GROUP_MISSING	Group account removed	0
SNAP_NEW_GROUP_SNAPSHOT	New group account snapshot file	0
SNAP_GROUP_MEMBER_NF	User account removed from group	0

This check reports changes to your system since the last time you ran Symantec ESM. These changes may be evidence of tampering. If Symantec ESM finds changes that are suspicious, examine your network for other evidence of tampering. If these changes were authorized, update the snapshot to prevent this message from being generated in the future.

Errors may indicate that the sifgroup.dat file is corrupted. If the sifgroup.dat file is corrupt, you can run CIFFIX to attempt a data repair or you can delete the snapshot file and recreate it by running the module without it.

This check does not examine NDS settings.

The sifgroup.dat file is initialized the first time this module is run on the agent system. Initialization consists of reading the current state of the system, essentially taking a picture of it, and storing that picture in the Symantec ESM snapshot file. Later, Symantec ESM compares the system's current state to the one recorded in the snapshot and reports any differences.

Changes are noted in the report as potential security problems. For example, if you have added a new group since you last ran Symantec ESM, and have selected this check, you will be notified of that addition in the security report. The Name field displays the full context name of the new group, and the Title field displays Group Account Added.

NDS module: Objects in agent context list will be considered

NetWare/NDS modules are divided into two categories:

- NDS module checks for security problems involving NDS objects.
- Server module checks for security problems involving server resources.

NDS modules are given a list of NDS contexts to check at installation. These can be changed with the ESMSETUP.NLM setup program.

This module checks only the parts of the tree that are listed in the agent context list of each NetWare/NDS agent where the module is run, except for checks that verify user access to home directories. Those checks report any object in the tree with unexpected access.

Login Parameters module

The Login Parameters module checks the Intruder Detection and Lockout parameters for user accounts to verify that these settings and parameters conform to your security policy. Only enabled module checks provide information. Symantec ESM enables some checks by default. The Login Parameters module can be edited to report only the information that you require.

Inactive accounts

This check reports accounts that have not been used for a specified number of days. Use the name list to include or exclude users from this check.

This check returns the following message:

Table 4-14 Inactive accounts message

Message	Title	Class
LOGIN_INACTIVE	Inactive account	1

Because inactive accounts can provide easy targets for intruders that are trying to break into your system, you should remove or disable them.

Unused accounts

This check reports new accounts that have never had a user login. Use the name list to include or exclude specific accounts from the check.

This check returns the following messages:

Table 4-15 Unused accounts messages

Message	Title	Class
LOGIN_UNUSED_BY_DAYS	Unused account	1
LOGIN_UNUSED	Unused account	1

Some unused accounts may be new. Others have become dormant or were created, then never used. A Number of Days parameter is provided to help distinguish between the following conditions:

- Accounts that were created X days ago but were never used
- Accounts that have never been used (i.e. logged into)
  This is the case in older versions of NDS where the account creation date is unavailable for a Number of Days determination.

New accounts are often set up with a default password or with no password at all. Because unused accounts can provide easy targets for intruders that are trying to break into your system, you should remove or disable them.

Disabled accounts

This check reports user accounts that have been disabled by the Administrator.

This check returns the following messages:

Table 4-16 Disabled accounts messages

Message	Title	Class
ACCOUNT_DISABLED	Disabled user account	0
DONT_USE_DISABLED	Invalid Name List Object: %DISABLED%	4

If you receive a message indicating that there is an invalid name list object, remove the entry, %DISABLED%, from the option list and run the policy again.

If an account has been disabled for a long time, it should probably be removed or disabled.

Locked accounts

This check reports accounts that have been locked by Intruder Detection due to excessive login attempts with an incorrect password. Use the name list to include or exclude specific accounts for the check.

This check returns the following message:

Table 4-17 Locked accounts message

Message	Title	Class
ACCOUNT_LOCKED	User account locked by intruder	4

A user account becomes locked by Intruder Detection if a user exceeds the login attempt count using an invalid password. These attempts could indicate an attempted break-in, or they could be the result of a valid user who has forgotten a password.

Determine whether the account was locked by an intruder or by a valid user, and take appropriate action if break-in attempts are suspected.

Limit workstation addresses

This check verifies that all accounts in the user list are restricted to logging in from listed workstation addresses. By default, privileged accounts (meaning those with Supervisor access rights) are included in the user list.

This check returns the following message:

Table 4-18 Limit workstation addresses messages

Message	Title	Class
NO_ADDR_RESTRICT	Privileged account with no station restrictions	3

Privileged accounts with unrestricted access to workstations on a Container can create a window of opportunity through which computer viruses may propagate and spread to the server.

All Administrator equivalent accounts should be restricted to logging in from a limited number of closely supervised workstations.

Limit concurrent logins

This check verifies that all users are limited to a number of concurrent connections less than or equal to that specified. The default value is two. Use the name list to specify users that are excluded or included in the check.

The check identifies the following types of conditions:

- Accounts that are in violation of security policy
- Accounts that have been granted exception status

This check returns the following messages:

Table 4-19 Limit concurrent logins messages

Message	Title	Class
TOO_MANY_CONNECTIONS	User's number of connections over limit	2
UNLIMITED_CONNECTIONS	User's number of connections not limited	2

Users with a high number of allowed connections are more apt to leave an unattended workstation that is logged into a corporate Container. This situation creates a security risk because intruders may access secured information through an idle workstation.

A small number of allowed connections reduces the incidence of unattended workstations that are logged into a Container. Review the account exceptions to verify that the number of allowed connections are needed.

Intruder detection enabled

This check verifies that Intruder Detection is enabled and checks the parameters specified by the Incorrect login attempts, Intruder attempt reset interval, and Intruder lockout reset interval options.

The check returns the following messages:

Table 4-20 Intruder detection enabled messages

Message	Title	Class
INTRUDER_DETECT_OFF	Intruder detection disabled	4
INTRUDER_ATTEMPT_NUM	Incorrect login attempts is greater than specified	3
INTRUDER_ATTEMPT_INTERVAL	Intruder attempt reset interval lower than policy allows	2
INTRUDER_LOCKOUT_INTERVAL	Intruder lockout reset interval lower than policy allows	2
INTRUDER_NO_LOCKOUT	No lockout after intruder detection	3

Without Intruder Detection enabled, intruders would remain unhindered in their attempts to hack into the server.

For optimal security, always enable Intruder Detection. Also, lock all accounts for at least eight hours after three incorrect login attempts have been detected within a 120-hour period.

Most of the other checks in this module cannot be performed if Intruder Detection is disabled. By default, Intruder Detection is turned OFF at the Container level within NDS.

Incorrect login attempts

Use this option to specify the maximum, allowable number of incorrect user login attempts for the Intruder detection enabled check.

With each failed attempt, the possibility of a security breach increases. A failed attempt limit that is set too high allows an intruder more opportunities to attempt a break in.

For maximum security, each Container should be set to lock accounts after more than three unsuccessful login attempts have been made.

Intruder attempt reset interval

Use this option to specify the minimum time span during which consecutive failed logins must occur to be counted toward the limit for the Intruder detection enabled check.

Allowing a short interval gives an intruder more opportunities to attempt a break in. Do not use a short interval. For maximum security, a count of bad login attempts should be retained for at least 45 minutes.

Intruder lockout reset interval

Use this option to specify the length of time that user accounts in the agent Container remain locked after intruder detection for the Intruder detection enabled check. When this option is enabled, the check also reports any Containers that do not have Lock Account After Detection enabled or that have settings that are lower than the policy recommendation.

When an agent Container does not lock accounts after a specified number of bad login attempts, or when the Container locks accounts only for a short interval, an unauthorized user is given the opportunity to continue repeated attempts to break into the Container.

For maximum security, accounts that are locked due to possible intrusion attempts should remain locked for at least 4 hours (240 minutes) after three incorrect login attempts have been detected within a 12-hour period.

NDS module: Objects in agent context list will be considered

NetWare/NDS modules are divided into two categories:

- NDS module checks for security problems involving NDS objects.
- Server module checks for security problems involving server resources.

NDS modules are given a list of NDS contexts to check at installation. These can be changed with the ESMSETUP.NLM setup program.

This module checks only the parts of the tree that are listed in the agent context list of each NetWare/NDS agent where the module is run.

Password Strength module

The Password Strength module checks the format, length, and expiration settings of passwords and applies a dictionary test while attempting to guess passwords.

User can change password

By default, NetWare/NDS allows users to change account passwords. Security considerations should limit group and certain other password changes to administrators.

If you set the parameter for this check to Yes, the check reports user accounts that do not allow users to change their passwords. Conversely, if you set the parameter to No, the check reports user accounts that allow users to change their passwords. The only valid parameters for this check are Yes and No.

The check returns the following messages:

Table 4-21 User can change password messages

Message	Title	Class
CAN_CHANGE_PASS	Password can be changed	1
CANNOT_CHANGE_PASS	Password cannot be changed	1
NOT_YES_NO	Invalid parameter for User Can Change Password	4

Only administrators should be able to change group and guest account passwords.

Password length restrictions

This check reports user accounts that do not require a password as well as accounts with passwords that are too short.

All accounts should require passwords that contain at least eight characters. Brute force methods can quickly guess shorter passwords.

The check returns the following messages:

Table 4-22 Password length restrictions messages

Message	Title	Class
PASS_NOT_REQUIRED	Password not required	3
PASS_SHORT	Password length enforcement	2

For optimal security, require passwords for all user accounts. Set the minimum password length to at least eight characters.

Accounts without passwords

This check reports user accounts that do not have passwords. By default, NetWare/NDS does not require account passwords. However, accounts without passwords can present a serious security risk. If intruders discover a login name, they can access the authorized user's personal files. They can also take advantage of the other privileges that the authorized user has on the system.

In addition to reporting accounts that do not have passwords, the check reports:

- Unreadable contexts located in a Master, Read-Write, or Read-Only NDS partition on a server
- Contexts not located in a Master, Read-Write, or Read-Only NDS partition on a server

Symantec ESM can check only the passwords of objects that are located in a Master, Read-Write, or Read-Only NDS partition. If Symantec ESM cannot read everything properly, it may not report accounts in some of the Container objects.

To ensure that Symantec ESM is able to check all of the contexts in the tree at least once, reconfigure the agent context lists on this and other agents. If Symantec ESM is unable to successfully scan objects that are located on a Master or NDS server partition, run DSREPAIR.NLM to determine the cause of the problem.

The check returns the following messages:

Table 4-23 Accounts without passwords messages

Message	Title	Class
BAD_PART_STATE	Invalid NDS partition state	3
BAD_PART_TYPE	Invalid NDS partition type	4
NO_PASS	Password does not exist	4

For optimal security, require passwords for all user accounts. Set the minimum password length to at least eight characters.

Force periodic password change

This check reports user accounts that have passwords with the following conditions:

- Expiration dates beyond the interval specified in the check
- Days Between Forced Changes greater than the interval specified in the check
- No set password expiration date

The check returns the following messages:

Table 4-24 Force periodic password change messages

Message	Title	Class
PASS_DISTANT_ EXPIRATION	Password expiration date exceeds standard	2
PASS_EXPIRATION_INTERVAL	Password expiration interval exceeds standard	2
PASS_NO_EXPIRATION	Password does not expire	3

For optimal security, limit all accounts to passwords that expire in less than 90 days.

Require unique passwords

This check reports user accounts that do not have NetWare's unique password checking enabled. When NetWare's unique password checking is enabled, users cannot reuse any of their last eight passwords. Requiring unique passwords minimizes the exposure to unauthorized use of compromised passwords.

The check returns the following message:

Table 4-25 Require unique passwords message

Message	Title	Class
NON_UNIQUE_PASS	Unique password not required	2

For optimal security, require unique passwords.

Limit grace logins

This check reports user accounts that have the number of Grace logins allowed or Remaining grace logins set to a value greater than the maximum specified in the policy, if the account has the Force periodic password changes check enabled.

Failure to limit grace logins defeats the purpose of having passwords expire.

The check returns the following messages:

Table 4-26 Limit grace logins messages

Message	Title	Class
PASS_TOOMANY_GRACE	Grace logins exceed policy	2
PASS_TOOMANY_REMAINING_GRACE	Remaining grace logins exceed policy	2
PASS_UNLIMITED_GRACE	Password grace logins unlimited	3

For optimal security, limit grace logins to six so users are required to change their account passwords.

Password = username

This check reports a user account if the account password matches the user's name. Intruders frequently use this combination to attempt a system break-in.

Symantec ESM provides the check for servers with a large number of user accounts. You can use this check when the Password = any username check takes too much time or consumes too much CPU.

Secure passwords have at least eight characters including one or more non-alphabetic characters. Passwords should not match an account or host name nor be found in any dictionary.

Note: This check will only run in Bindery mode on systems using NDS 8.x.

The check returns the following messages:

Table 4-27 Password = username messages

Message	Title	Class
BAD_PART_STATE	Invalid NDS partition state	3
BAD_PART_TYPE	Invalid NDS partition type	4
CANT_CRACK	Can't crack user's password	0
FOUND_PASSWORD	ESM guessed user's password	3

If Symantec ESM reports problems in this check, assign more secure passwords to the user accounts that are reported by this check, then notify each user to log in using the more secure password. Have the users complete the process by changing their passwords again.

Password = any username

This check reports a user account if the account password matches any user's name. Intruders frequently substitute user names for passwords when attempting a system break-in.

You can use the Password = username check if this check takes too much time or consumes too much CPU. However, continue to run this check during periods of low system usage.

Secure passwords have at least eight characters including one or more non-alphabetic characters. Passwords should not match an account or host name nor be found in any dictionary.

Note: This check will only run in Bindery mode on systems using NDS 8.x.

The check returns the following messages:

Table 4-28 Password = any username messages

Message	Title	Class
BAD_PART_STATE	Invalid NDS partition state	3
BAD_PART_TYPE	Invalid NDS partition type	4
CANT_CRACK	Can't crack user's password	0
FOUND_PASSWORD	ESM guessed user's password	3

If Symantec ESM reports problems in this check, immediately assign more secure passwords to reported user accounts. Then notify the users and ask them to log in with the more secure passwords. Have the users complete the process by changing their passwords again.

Password = wordlist word

This check reports a user account if the account password exists in one or more dictionary files. If Symantec ESM can guess a password using common words, then an intruder may also.

Use the name list in the Password = wordlist word (cont'd) option to include or exclude users for this check. You can also enter the name of a Container to be included or excluded for the check.

This check searches all accounts, even those that are not required to have a password.

Note: This check will only run in Bindery mode on systems using NDS 8.x.

This check returns the following messages:

Table 4-29 Password = wordlist word messages

Message	Title	Class
BAD_PART_STATE	Invalid NDS partition state	3
BAD_PART_TYPE	Invalid NDS partition type	4
CANT_CRACK	Can't crack user's password	0
FOUND_PASSWORD	ESM guessed user's password	3
NO_WORD_FILES	No word files selected for Password = Wordlist Word	4

The check reports the following information about account passwords and NDS contexts:

- User accounts with passwords that are matched by words or variations of words in specified dictionary files
- NDS object names with special characters that cause problems for the Symantec ESM password cracking technique
- Contexts that are not in a Master or Read-Only NDS partition on a server and, therefore, are unverifiable
- Contexts that are in a Master or Read-Only NDS partition on a server that are unreadable

Note: Because Symantec ESM cannot check the passwords of objects that are not located in Master or NDS partitions and Containers, you must reconfigure the agent context lists so that all contexts in the tree are checked at least once.

If the server or NDS Container is unreadable, you must run DSREPAIR.NLM to determine the cause of the problem.

Password guessing cannot be done from a remote agent. It can be done only directly on the server in question.

If you enable the Password = wordlist word check but fail to specify a word list, Symantec ESM is unable to perform the check.

NDS objects with special characters in their names must be renamed before you to run the check.

If Symantec ESM reports problems in this check, immediately assign more secure passwords to reported user accounts. Then notify the users and ask them to log in using the more secure passwords. Have the users complete the process by changing their passwords again.

Secure passwords have at least eight characters, with at least one number or non-alphabetic character as a component.

Password = wordlist word (cont'd)

Use this option to include or exclude users for the Password = wordlist word check.

Reverse order

This check reports user accounts with passwords that match words spelled backward; e.g., golf -> flog.

You must enable the Password = wordlist word check for this check to work. The enabled word files in that check provide the words for this check.

You can include the Login names in the Containers of the agent's context list as additional words for the check by enabling the Password = username or Password = any username checks.

Secure passwords have at least eight characters including one or more non-alphabetic characters. Passwords should not match an account or host name nor be found in any dictionary.

This check returns the following message:

Table 4-30 Reverse order message

Message	Title	Class
FOUND_PASSWORD	ESM guessed user's password	3

If Symantec ESM reports problems in this check, immediately assign more secure passwords to reported user accounts. Then notify the users and ask them to log in using the more secure passwords. Have the users complete the process by changing their passwords again.

Double occurrences

This check reports user accounts with passwords that match double occurrences of a word; e.g., golf -> golfgolf.

You must enable the Password = wordlist word check for this check to work. The enabled word files in that check provide the words for this check.

You can include the login names in the Containers of the agent's context list as additional words for the check by enabling the Password = username or Password = any username checks.

Secure passwords have at least eight characters including one or more non-alphabetic characters. Passwords should not match an account or host name nor be found in any dictionary.

This check returns the following message:

Table 4-31 Double occurrences message

Message	Title	Class
FOUND_PASSWORD	ESM guessed user's password	3

If Symantec ESM reports problems in this check, immediately assign more secure passwords to reported user accounts. Then notify the users and ask them to log in using the more secure passwords. Have the users complete the process by changing their passwords again.

Plural forms

This check reports user accounts with passwords that match plural form of words; e.g., golf -> golfs.

You must enable the Password = wordlist word check for this check to work. The enabled word files in that check provide the words for this check.

You can include the Login names in the Containers of the agent's context list as additional words for the check by enabling the Password = username or Password = any username checks.

Secure passwords have at least eight characters including one or more non-alphabetic characters. Passwords should not match an account or host name nor be found in any dictionary.

This check returns the following message:

Table 4-32 Plural forms message

Message	Title	Class
FOUND_PASSWORD	ESM guessed user's password	3

If Symantec ESM reports problems in this check, immediately assign more secure passwords to reported user accounts. Then notify the users and ask them to log in using the more secure passwords. Have the users complete the process by changing their passwords again.

Add prefix

This check reports user accounts with passwords that match words with a prefix that has been added to the Prefixes to use name list; e.g., golf -> progolf.

You must enable the Password = wordlist word check for this check to work. The enabled word files in that check provide the words for this check.

You can include the Login names in the Containers of the agent's context list as additional words for the check by enabling the Password = username or Password = any username checks.

Secure passwords have at least eight characters including one or more non-alphabetic characters. Passwords should not match an account or host name, nor be found in any dictionary.

The check returns the following message:

Table 4-33 Add prefix message

Message	Title	Class
FOUND_PASSWORD	ESM guessed user's password	3

If Symantec ESM reports problems in this check, immediately assign more secure passwords to reported user accounts. Then notify the users and ask them to log in using the more secure passwords. Have the users complete the process by changing their passwords again.

Add suffix

This check reports user accounts with passwords that match words with a suffix that has been added to the Suffixes to use name list; e.g., golf -> golfball.

You must enable the Password = wordlist word check for this check to work. The enabled word files in that check provide the words for this check.

You can include the Login names in the Containers of the agent's context list as additional words for the check by enabling the Password = username or Password = any username checks.

Secure passwords have at least eight characters including one or more non-alphabetic characters. Passwords should not match an account or host name, nor be found in any dictionary.

The check returns the following message:

Table 4-34 Add suffix message

Message	Title	Class
FOUND_PASSWORD	ESM guessed user's password	3

If Symantec ESM reports problems in this check, immediately assign more secure passwords to reported user accounts. Then notify the users and ask them to log in using the more secure passwords. Have users complete the process by changing their passwords again.

NDS module: Objects in agent context list will be considered

NetWare/NDS modules are divided into two categories:

- NDS module checks for security problems involving NDS objects.
- Server module checks for security problems involving server resources.

NDS modules are given a list of NDS contexts to check at installation. These can be changed with the ESMSETUP.NLM setup program.

This module checks only the parts of the tree that are listed in the agent context list of each NetWare/NDS agent where the module is run.

Using and editing word files

Checks in the Password Strength module compare passwords to words in word files (.wrd files). The Password = wordlist word check, for example, compares passwords to dictionary word files. Passwords that match word file words (and variations of those words) can be easily guessed by intruders and are a security threat.

The Password Strength module provides the following word files. An asterisk represents a language identifier.

Table 4-35 Word list files by category

Category	File	No. of words
First name	firstnam.wrd	6511
	Fname_D.wrd	602
	Fname_FR.wrd	784
	Fname_I.wrd	952
	Fname_NL.wrd	724
	Fname_P.wrd	449
	Fname_SP.wrd	349
Last name	lastnam.wrd	2958
	Fname_D.wrd	3101
	Fname_FR.wrd	3196
	Fname_I.wrd	2848
	Fname_NL.wrd	3005
	Fname_P.wrd	723
	Fname_SP.wrd	3027

Table 4-35 Word list files by category

Category	File	No. of words
Dictionaries*	synopsis.wrd	253
	english.wrd	3489
	lenglish.wrd	34886
	Slist_D.wrd	169
	List_D.wrd	2597
	Llist_D.wrd	19319
	Slist_FR.wrd	166
	List_FR.wrd	2517
	Llist_FR.wrd	17893
	Slist_I.wrd	227
	List_I.wrd	2490
	Llist_I.wrd	14814
	Slist_NL.wrd	399
	List_NL.wrd	3038
	Llist_NL.wrd	14232
	Slist_P.wrd	217
	List_P.wrd	2169
	Llist_P.wrd	16950
	Slist_SP.wrd	162
	List_SP.wrd	2424
	Llist_SP.wrd	19580
	yiddish.wrd	639
Computers	computer.wrd	143
	Compu_D.wrd	545
	Compu_FR.wrd	346
	Compu_I.wrd	255
	Compu_NL.wrd	184
	Compu_P.wrd	226
	Compu_SP.wrd	216
	defaults.wrd	465
	nerdnet-defaults.wrd	142
	ntccrack.wrd	16870
	Oracle.wrd	37
	wormlist.wrd	432
Specialty	cartoon.wrd	133
	college.wrd	819
	disney.wrd	433
	hpotter.wrd	715
	python.wrd	3443
	sports.wrd	247
	tolkien.wrd	471
	trek.wrd	876

To enable a word file

1. In the Disabled Word Files list, select a word file.
2. Click the left arrow.

To disable a word file

1. In the Enabled Word files list, select a word file.
2. Click the right arrow.

To edit a word file

1. Do one of the following:
   - Open an existing word file in a text editor. (NetWare word files are located in c:\program files\symantec\esm\words for Symantec ESM 5.5 and in c:\program files\axent\esm\words for Symantec Esm 5.1.)
   - Create a new ASCII plain-text word file in a text editor. Name the new file with a .wrd extension (for example, medical.wrd).
2. Type only one word per line.
3. Save the file in the words directory.

User Files (Queries) module

The User Files module reports problems when file ownerships and permissions in NetWare and other systems do not match the original baselines.

Access to NDS login scripts

This check examines object profiles, Containers, and user login scripts and reports any user with access to another user object's login script.

This check returns the following message:

Table 4-36 Access to NDS login scripts message

Message	Title	Class
USERFILE_ACL	Excessive ACL assignment to Container, Profile, or User Login Script	4

An unauthorized user with access to another's login script can modify that login script and cause undesired network actions when the authorized user next logs in.

Conduct a strict review of any users that are reported by this check.

Access to DOS bindery login scripts

This check verifies that only assigned users have access to their DOS bindery login scripts. Perform this check only if bindery emulation is used on the agent server.

The check reports the following bindery conditions:

- User accounts with access to another user's mail directory
- User accounts with no SYS:MAIL\userid directory
- Lack of a bindery emulation context on a server

The lack of a bindery emulation context on a server is not a problem. Symantec ESM simply not check the SYS:MAIL directories.

The check returns the following messages:

Table 4-37 Access to DOS bindery login scripts messages

Message	Title	Class
NO_BINDERY_ EMULATION	No bindery emulation found	0
USERFILE_MAIL_DIR	User account without MAIL subdirectory	1

Table 4-37 Access to DOS bindery login scripts messages

Message	Title	Class
USERFILE_TRUST	User account with trustee assignment to other mail directory	4

An unauthorized user with access to another's login script can modify that login script and potentially cause undesired network actions when the authorized user next logs in.

Conduct a thorough review of all users that are reported by this check.

Bindery objects are not created with NWAdmin or ConsoleOne. These objects appear in your NDS tree as a result of an upgrade from a NetWare 2x or 3x server.

Furthermore, NWAdmin or ConsoleOne cannot be used to create login scripts for these users. To create login scripts for these users, you must use SYSCON.

All bindery users must have DOS login script

This check verifies that all local bindery user accounts have a DOS login script (SYS:MAIL\<userid>\LOGIN). Perform this check only if bindery emulation is used on the agent server.

Note: The userid is an eight-digit hexadecimal number that corresponds to the user record in the bindery.

The check returns the following messages:

Table 4-38 Bindery users DOS login script messages

Message	Title	Class
USERFILE_LOGIN	User account without DOS bindery login script	2
USERFILE_MAIL_DIR	User account without MAIL subdirectory	1
NO_BINDERY_EMULATION	No bindery emulation found	0

User accounts that lack a DOS bindery login script could allow an unauthorized user to create a login script in their mail directories. That action could cause undesired results when the authorized user next logs in.

NDS module: Objects in agent context list will be considered

NetWare/NDS modules are divided into two categories:

- NDS module checks for security problems involving NDS objects.
- Server module checks for security problems involving server resources.

NDS modules are given a list of NDS contexts to check at installation. These can be changed with the ESMSETUP.NLM setup program.

This module checks only the parts of the tree that are listed in the agent context list of each NetWare/NDS agent where the module is run.

Chapter 5

Checking network and server settings

This chapter includes the following topics:

- Network Integrity module
- Object Integrity module
- Startup Files module
- System Auditing module

These modules check the network and server settings on a system for unauthorized access, modification, and tampering. They also retrieve information about the systems on the network.

This chapter also lists the messages that are returned by individual security checks. For common messages that are returned by multiple security checks, see "Reviewing common messages" on page 45.

To learn how to use name lists, see "Editing name lists" on page 35.

Network Integrity module

The Network Integrity module checks limitations that are placed on users such as restrictions on concurrent connections, disk-space limits, and hardware login addresses.

Disk space limits

This check verifies that all users are limited in the amount of disk space that they may use on any NetWare volume. The check reports users who have disk space limitations and users whose limitations exceed the value specified for the check.

Because NetWare does not limit disk space per user by default, the check may report many users who have unlimited disk space. The check's name list lets you specify users that are excluded or included in the check.

The check returns the following messages:

Table 5-1 Disk space limits messages

Message	Title	Class
NET_DISK_UNLIMITED	User's disk space restriction not limited	3
NET_DISK_SPACE	User's disk space restriction over limit	3

Excessive directory size can indicate potential security problems. In addition, a user who overfills disk space can block other users from using the server.

Place limits on user directories that reside on shared servers.

All volumes have NDS objects in tree

This check verifies that the NDS tree contains an object for the agent's server and for each of its volumes.

The check returns the following messages:

Table 5-2 NDS objects in tree messages

Message	Title	Class
SERVER_NOT_IN_TREE	Server is not represented in the tree	1
VOLUME_NOT_IN_TREE	Volume is not represented in the tree	1

The server and volume objects store important information about the files and directories on your network. If a server or volume is missing in the NDS tree, Symantec ESM is unable to verify the requested security information.

Server module: All objects in the tree will be considered

NetWare/NDS modules are divided into two categories:

- NDS module checks for security problems involving NDS objects.
- Server module checks for security problems involving server resources.

This server module checks access to server resources against objects in the entire NDS tree.

Object Integrity module

The Object Integrity module checks NetWare object settings for potential security problems.

Updateable Object Integrity messages

The NetWare Object Integrity module has three security checks that are snapshot-updateable messages.

Snapshot-updateable messages let you update snapshots to match current values for the agent system. These messages display the letters SU in the Updateable/Correctable column of the console grid.

Run the module once to create the agent snapshot file before you run the module to look for security weaknesses.

Table 5-3 Updateable/correctable Object Integrity messages

Security check	Code	Message name
New, changed, and deleted print queues	SU	SNAP_PRINTQ_NEW
New, changed, and deleted print queues	SU	SNAP_PRINTQ_GONE
New, changed, and deleted print queues	SU	DEVICE_PQ_DIR_DIF
New, changed, and deleted print queues	SU	PQ_TRUSTEE_ADDED
New, changed, and deleted print queues	SU	PQ_USER_ADDED
New, changed, and deleted print queues	SU	PQ_USER_REMOVED
New, changed, and deleted print queues	SU	PQ_OPERATOR_REMOVED
New, changed, and deleted print queues	SU	PQ_OPERATOR_ADDED
New, changed, and deleted print queues	SU	PQ_SERVER_REMOVED
New, changed, and deleted print queues	SU	PQ_SERVER_ADDED
New, changed, and deleted print servers	SU	PS_USERS_REMOVED
New, changed, and deleted print servers	SU	PS_USERS_ADDED
New, changed, and deleted print servers	SU	PS_OPERAT_REMOVED
New, changed, and deleted print servers	SU	PS_OPERAT_ADDED
New, changed, and deleted print servers	SU	PS_ADDED

Table 5-3 Updateable/correctable Object Integrity messages

Security check	Code	Message name
New, changed, and deleted print servers	SU	PS_ID_MISMATCH
New, changed, and deleted print servers	SU	PS_NAME_MISMATCH
New, changed, and deleted file servers	SU	SERVER_ADDED
New, changed, and deleted file servers	SU	NW_NAME_MISMATCH
New, changed, and deleted file servers	SU	NW_ADDR_MISMATCH
New, changed, and deleted file servers	SU	F_SERVER_REMOVED

New, changed, and deleted print servers

This check compares the stored snapshot of print server objects against the object properties and reports any changes that were made since the last snapshot update.

The check returns the following messages:

Table 5-4 Print server messages

Message	Title	Class
PS_OPERAT_REMOVED	Print server operator removed	1
PS_USERS_ADDED	Print server user added	2
PS_ADDED	Print server added	2
PS_OPERAT_ADDED	Print server operator added	2
PS_ID_MISMATCH	Print server object ID mismatch	2
PS_NAME_MISMATCH	Print server name mismatch	2
PS_USERS_REMOVED	Print server user removed	1

New objects and object changes in the NDS tree could be evidence of tampering. Examine the system for other evidence of tampering.

If these changes were authorized, update the Symantec ESM snapshot to prevent this message from being generated in the future.

New, changed, and deleted print queues

This check compares the stored snapshot of print server queues against the print queue properties and reports any changes that were made since the last snapshot update.

The check returns the following messages:

Table 5-5 Print queue messages

Message	Title	Class
PQ_OPERATOR_ADDED	Print queue operator added	2
PQ_TRUSTEE_ADDED	Print queue directory trustee added	2
PQ_USER_ADDED	Print queue user added	2
PQ_OPERATOR_REMOVED	Print queue operator removed	1
PQ_SERVER_REMOVED	Print server removed from print queue	1
PQ_SERVER_ADDED	Print queue server added	2
DEVICE_PQ_DIR_DIF	Print queue directory has changed	2
SNAP_PRINTQ_GONE	Print queue deleted	2
SNAP_PRINTQ_NEW	Print queue added	2
PQ_USER_REMOVED	Print queue user removed	1

New objects or object changes in the NDS tree may be evidence of tampering. Examine the system for other evidence of tampering. If these changes were authorized, update the Symantec ESM snapshot to prevent this message from being generated in the future.

New, changed, and deleted file servers

This check compares the stored snapshot of known file servers against the current server configuration and reports any changes that were made since the last snapshot update.

The check returns the following messages:

Table 5-6 File server messages

Message	Title	Class
SERVER_ADDED	Server added to network	3
F_SERVER_REMOVED	File server removed from system	1
NW_ADDR_MISMATCH	Network address mismatch	2

New objects in the NDS tree could be evidence of tampering. Examine reported servers for other evidence of tampering.

If these changes were authorized, update the Symantec ESM snapshot to prevent this message from being generated in the future.

Excessive ACL access

This check reports errors when excessive ACL access has been granted to any NDS object. If an object is found with excessive ACL access, a security equivalence check of the object is performed.

NetWare/NDS uses object rights and property rights as follows:

- Object rights control what you can do to objects in the NDS tree.
- Property rights determine what you can do to the properties of those objects.

Since the purpose of checking ACLs is to identify those users who have Supervisor privileges in the tree, excluding %PRIVILEGED% would defeat the purpose of this check.

The check returns the following messages:

Table 5-7 Excessive ACL access messages

Message	Title	Class
DONT_EXCLUDE_PRIVILEGED	Invalid Name List Object: %PRIVILEGED%	2
EXCESSIVE_CONTAINER_ACL	Excessive Container ACL assignment	2

Table 5-7 Excessive ACL access messages

Message	Title	Class
EXCESSIVE_SERVER_ACL	Excessive NetWare Server object ACL assignment	2
EXCESSIVE_OBJECT_ACL	Excessive object ACL assignment	2
SECURITY_EQUIV_PRIV_OBJECT	Security equivalence with privileged object	2

The ACL (access control list) defines trustee assignments and user rights. This check reports vital information regarding the object, user, and ACL access rights using the following format:

- The Name field lists the object name.

  For example, a volume object (Server_Volume)

- The information field shows the object that has the excessive ACL assignment to the volume object.

  For example, the report might indicate the following:

  All Property Rights / the user name (user1) / CRWAS.

  This line would indicate that user1 has S (Supervisor), C (Create), R (Read), W (Write), and A (Add self) property rights to the volume object.

- The second line down would show the same volume object in the Name field, and the same user object (user1), with excessive Object Rights to the volume object, in the Information field. However, user1 would now appear with the object rights BADRS.

  This second line would indicate that user1 has been granted B (Browse), D (Delete), R (Rename), and S (Supervisor) rights to the volume object.

Additional items to remember when considering the reports for NDS objects with excessive Container ACL assignments:

- Any object that has the SUPERVISOR [S] ACL assignment to the [Object Rights] of the Container will have SUPERVISOR privileges on all objects. Unless filtered, this assignment is inherited by all subordinate objects.

- Any object that has the SUPERVISOR [S], or the WRITE [W] ACL assignment to [All Properties] of the Container will have sufficient privileges to modify the NDS data on all properties of all objects. Unless filtered, this assignment is inherited by subordinate objects.

- Any object that has the SUPERVISOR [S], or the WRITE [W] ACL assignment to a property of the Container will have sufficient privileges to modify the NDS data of the property.

The check also indicates excessive ACL rights to the following types of NetWare/ NDS objects:

- NetWare Server object ACL assignments:
  Objects with SUPERVISOR [S] ACL assignment to the [Object Rights] of the NetWare Server object that is inherited to all physical volumes on the server
  Objects with SUPERVISOR [S] or WRITE [W] ACL assignment to All Properties of the NetWare server that can modify the NDS data of all properties of the NetWare Server object
  Objects with SUPERVISOR [S], or WRITE [W] ACL assignment with the privileges to modify the NDS data of the NetWare Server object
- NDS objects with excessive ACL assignment to another object:
  Objects with SUPERVISOR [S] ACL assignment to the Object Rights of another object that can exercise such privileges on the other object
  Objects with SUPERVISOR [S], or WRITE [W] ACL assignment to All Properties of another object and that can modify the NDS data of all properties of the other object
- NDS objects that are security equivalent to objects having excessive ACL assignments
- Container Objects with ACL rights that block the Symantec ESM agent from performing a proper check on itself and subordinate objects

Users with excessive ACL rights can have undesired access to files and directories on your file system and/or excessive rights in the NDS tree.

NetWare server equivalences

This check reports any objects with security equivalences to NetWare Server objects. Objects with this access have SUPERVISOR privileges on the server. The access rights of NDS objects that are security equivalent of NetWare Server objects are inherited to all physical volumes on the server.

This check returns the following message:

Table 5-8 NetWare server equivalencies message

Message	Title	Class
SECURITY_EQUIVALENCE_SERVER	Security equivalence with NetWare Server object	2

Because changes to the NetWare server objects may be evidence of tampering, you should examine the system for other evidence of tampering. If these changes were authorized, update the snapshot to prevent this message from being generated in the future.

Server console operators

This check reports NDS objects that are console operators of NetWare server objects. Objects with this access may remotely change the server date and time and down the server.

The check returns the following message:

Table 5-9 Server console operators message

Message	Title	Class
CONSOLE_OPERATOR_SERVER	Console operator on NetWare Server object	2

Review the report to ensure that only authorized NDS objects have been granted these privileges.

Stealth objects

This check reports any inherited rights filters (IRFs) that are found in the agent's local NDS database that block [S]upervisor and [B]rowse privileges and create objects that even administrators are unable to see.

The behavior of this check is modified by two related options: ACLs of stealth objects and Subordinates of stealth objects.

Note: This check will not work on systems using NDS 8.x.

The check returns the following messages:

Table 5-10 Stealth objects messages

Message	Title	Class
STEALTH_IRF_FOUND	IRF blocks [S]upervisor and [B]rowse privileges	4
STEALTH_SUB_FOUND	Subordinate to stealth object found	4
STEALTH_TWO_STAGE	Two-stage stealth object found	4
STEALTH_ACL_FOUND	ACL on stealth object found	4

Even system administrators cannot see or manage stealth objects and their subordinates.

Symantec ESM is the only efficient way for a system administrator to immediately verify the existence of stealth objects in the NDS tree.

ACLs of stealth objects

This option modifies the behavior of the Stealth objects check. When that check and this option are both enabled, the check lists all ACLs for any stealth objects that are found to indicate who has access to the stealth objects (i.e., who created them and who uses them).

Subordinates of stealth objects

This option modifies the behavior of the Stealth objects check. When that check and this option are both enabled, the check lists all objects that are subordinate to a stealth Container to indicate the scope of what is hidden.

ESM agent object's access to agent's contexts

This check verifies that the agent's ESM object has at least [B]rowse object rights and [R]ead property rights on all objects within its agent context list. It also reports any access control lists (ACLs) and inherited rights filters (IRFs) that are found in the agent's local DS database files that block the agent's ESM object.

The check returns the following messages:

Table 5-11 ESM agent access to contexts messages

Message	Title	Class
CURR_ESM_OBJ	Current ESM agent object	0
CANT_READ	ESM agent object can't read object properties	4
IRF_BLOCKS_ESM	IRF blocks ESM	4
ACL_BLOCKS_ESM	ACL blocks ESM	4

Inadequate rights can hinder the ESM agent object from performing proper checks on itself and on its subordinate objects. Increase the ESM object's rights to its object.

Missing object properties

This check reports objects with blank information fields for properties that NDS considers optional but that your security policy considers mandatory.

Use the name list to specify object classes and properties that are required by your security policy. Name list entries must be specified in the form of <class>/<property>. You can also specify the NDS objects that are included in the check with the Missing object properties (cont'd) option.

The check returns the following messages:

Table 5-12 Missing object properties messages

Message	Title	Class
MISSING_PROPERTY	Missing property	1
BAD_PROPERTY	Property list entry is invalid	4
BAD_CLASS	Class entry is invalid	4
NO_PROPERTY_LIST	List of required properties is empty	4
MANDATORY_PROPERTY	Property is already mandatory in NDS	4

Objects that are in compliance with your company security policy will boost the level of security for these objects and make changes easier to identify. The end result will be a standardized security check.

The NetWare setting locations vary depending on the missing object that is reported. You can usually find the information on a details page in NWAdmin or ConsoleOne.

Missing object properties (cont'd)

Use this option to specify the NDS objects that are included in the Missing object properties check.

NDS module: Objects in agent context list will be considered

NetWare/NDS modules are divided into two categories:

- NDS module checks for security problems involving NDS objects.
- Server module checks for security problems involving server resources.

NDS modules are given a list of NDS contexts to check at installation. These can be changed with the ESMSETUP.NLM setup program.

This module checks only the parts of the tree that are listed in the agent context list of each NetWare/NDS agent where the module is run.

Startup Files module

The Startup Files module checks the NetWare Startup files for potential security problems.

Updateable Startup Files messages

The NetWare Startup Files module has three security checks that produce snapshot-updateable messages.

Snapshot-updateable messages let you update snapshots to match current values for the agent system. These messages display the letters SU in the Updateable/Correctable column of the console grid.

Run the module once to create the agent snapshot file before you run the module to look for security weaknesses.

Table 5-13 Updateable Startup Files messages

Security check	Code	Message name
NLMs removed since snapshot	SU	NLM_SS_DEL
NLMs changed since snapshot	SU	NLM_SS_CHG
NLMs added since snapshot	SU	NLM_SS_NEW

SECURE CONSOLE

This check verifies that the AUTOEXEC.NCF file contains the SECURE CONSOLE command, that the console is secured, and that DOS has been unloaded. If the console is secured, the REMOVE DOS command is not required.

Theoretically, any NLM can crash the server or damage its files. Because NLMs automatically have supervisory access to all server resources, you must use caution to prevent unauthorized NLMs from running on your server.

The AUTOEXEC.NCF startup file on the agent server does not secure the console. If the agent's console is not currently secure, then DOS is loaded. Remove DOS from memory so there can be no access to local disk drives.

The SECURE CONSOLE command unloads DOS from the system, prevents loadable modules from being loaded from any directory other than SYS:SYSTEM, and prevents keyboard entry into the OS debugger.

This check returns the following messages:

Table 5-14 Secure console messages

Message	Title	Class
SERVER_SECURE	The NetWare console has not been secured	4
STARTUP_SECURE	AUTOEXEC.NCF does not secure console	4

An NLM can crash the server or damage its files. Additionally, programs that can capture passwords, and perform other covert tasks, are easily loaded from local drives, in particular from drives with removable media (such as floppy drives).

Include the SECURE CONSOLE command (which removes DOS as part of securing the console) in the AUTOEXEC.NCF file.

REMOVE DOS

This check verifies that AUTOEXEC.NCF contains the REMOVE DOS command and that DOS has been unloaded.

REMOVE DOS alone does not prevent keyboard entry into the OS debugger, nor does it prevent loadable modules (NLMs) from being loaded from areas other than SYS:SYSTEM. The startup file AUTOEXEC.NCF does not automatically remove DOS from the operating system image.

Note: DOS does not exist in NetWare 5.x or 6.x. Therefore, Symantec ESM will not report a problem, and this check is unnecessary.

This check returns the following messages:

Table 5-15 Remove DOS messages

Message	Title	Class
STARTUP_DOS	AUTOEXEC.NCF does not remove DOS	4
SERVER_DOS	Server currently has DOS loaded	4

Programs that can capture passwords and perform other covert tasks are easily loaded from local drives, in particular from drives with removable media (such as floppy drives). Remove DOS from memory so there is no access to local disk drives.

The best way to remove DOS is to add the SECURE CONSOLE command (which removes DOS as part of securing the console) to the AUTOEXEC.NCF file. The REMOVE DOS command also removes DOS, but it does so without securing the console.

ALLOW UNENCRYPTED PASSWORDS = ON

This check verifies that the AUTOEXEC.NCF file does not set the ALLOW UNENCRYPTED PASSWORDS parameter to ON and that the parameter is currently set to OFF (since it can be changed at any time from the console).

This check returns the following messages:

Table 5-16 Unencrypted passwords ON messages

Message	Title	Class
SERVER_UNENCRYPT	Server currently allows unencrypted passwords	4
STARTUP_UNENCRYPT	AUTOEXEC.NCF allows unencrypted passwords	4

Allow unencrypted passwords to be set on agent servers only if NetWare 2x servers are operating on the same network.

Because unencrypted passwords can be captured from the network wire using available software, you should turn off unencrypted passwords unless they are absolutely necessary.

LOAD REMOTE with unencrypted password

This check verifies that the AUTOEXEC.NCF file does not have a LOAD REMOTE directive that allows an unencrypted password.

This check returns the following message:

Table 5-17 LOAD REMOTE with unencrypted password message

Message	Title	Class
LOAD_REMOTE_FOUND	REMOTE.NLM loaded with unencrypted password	4

Because this option creates a major security risk, you should configure the LOAD REMOTE option with password security.

Note: Make sure that the line reads LOAD REMOTE -E <hash> rather than LOAD REMOTE <password>. The first instance is secure; the second instance is not and could allow an intruder to spoof the configuration.

Access to files loaded by AUTOEXEC.NCF

This check verifies that AUTOEXEC.NCF and all its files load during system boot. It lists files that are not flagged as read only, as well as all users that have write access to these files. Use the name list to exclude authorized users with write access from this check.

Note: Module load commands to be checked must include the full NetWare path with module extension.

The check returns the following messages:

Table 5-18 Access to AUTOEXEC.NCF loaded files messages

Message	Title	Class
STARTUP_RW	Writable files in AUTOEXEC.NCF	1
STARTUP_DOSDRV	Programs in AUTOEXEC.NCF that reside on DOS drives	1
FILE_NOT_FOUND	File referenced in startup files not found	1
STARTUP_ACCESS	Users with access to programs loaded from AUTOEXEC.NCF	1

There is no security on removable media drives. Because anyone with physical access to the file server could replace programs that have been loaded by AUTOEXEC.NCF from a DOS drive, you should move these programs to the SYS:SYSTEM directory of the file server and change the AUTOEXEC.NCF file to reflect the move.

Because files that are loaded by AUTOEXEC.NCF and flagged as writable can be accessed, modified, or replaced by anyone with write access to the directory where these files are stored, you should flag these programs as Read Only.

Unencrypted passwords should be allowed only on networks that maintain NetWare 2.x servers. Because unencrypted passwords can be caught from the network wire using available software, you should turn off these passwords unless they are absolutely necessary.

Because user accounts with write access to program files that are loaded by AUTOEXEC.NCF have the ability to gain control of the server by replacing or tampering with existing programs, they should be reviewed, and write access should be limited to administrators and/or privileged users.

NLMs currently loaded on server

This check lists the NLMs that are currently loaded on the server.

The check returns the following message:

Table 5-19 Loaded NLMs message

Message	Title	Class
NLM_LIST	NLM is currently loaded	0

This check provides information. No security action is required.

NLMs required to be loaded

This check identifies required files that do not appear on the server. Use the name list to specify the required NLMs that are included in the check.

The check returns the following message:

Table 5-20 Required NLMs message

Message	Title	Class
REQ_NLM_NOTRUN	Required NLM is not loaded	4

NLMs not allowed to be loaded

This check identifies disallowed files that are loaded on the server. Use the name list to specify the disallowed NLMs that are included in the check.

This check returns the following message:

Table 5-21 Disallowed NLMs message

Message	Title	Class
DISSALLOW_NLM_RUN	Disallowed NLM is loaded	4

NLMs added since snapshot

This check compares the list of currently loaded NLMs against information in the stored snapshot and reports any NLMs that have been added since the snapshot was last updated.

This check returns the following message:

Table 5-22 Added NLMs message

Message	Title	Class
NLM_SS_NEW	NLM is new	0

This check provides information. No security action is required.

NLMs removed since snapshot

This check compares the list of currently loaded NLMs against information in the stored snapshot and reports any NLMs that have been removed since the snapshot was last updated.

This check returns the following message:

Table 5-23 Removed NLMs message

Message	Title	Class
NLM_SS_DEL	NLM had been unloaded	0

This check provides information. No security action is required.

NLMs changed since snapshot

This check compares the list of currently loaded NLMs against information in the stored snapshot and reports any changes that have occurred in the actual NLM files or file attributes since the last snapshot update.

This check returns the following message:

Table 5-24 Changed NLMs message

Message	Title	Class
NLM_SS_CHG	NLM had been changed	1

Always investigate reported changes to verify that they are not evidence of tampering.

NetWare console parameters

This check compares the console SET parameters for each agent against records in enabled template files. You can use the Template Editor to edit the Symantec ESM default NW Console Params template or to create your own template for this check. See "Editing the NW console parameters template" on page 111.

Use the name list to enable or disable template files for the check. Symantec ESM's c2.nws template file, which is enabled by default, checks the console parameters that are recommended by Novell and included in SYS:SYSTEM\SECURE.NCF.

This check returns the following messages:

Table 5-25 NW console parameters messages

Message	Title	Class
SET_PARAM_ GREEN	Value of console parameter does not match template (green)	0
SET_PARAM_ YELLOW	Value of console parameter does not match template (yellow)	1
SET_PARAM_ RED	Value of console parameter does not match template (red)	4
SETPARAM_TMPL_ERROR	Problem in console parameters template	4
NOTEMPLATES	No template files specified	4
MISSINGPARAM	Missing console parameters	4

The console parameter settings that are monitored by Symantec ESM's default template are required to certify a NetWare server as C2-compliant.

Editing the NW console parameters template

The NetWare console parameters check in the Startup Files module uses information in the NW Console Parameters template to check the console SET parameters on a NetWare/NDS agent.

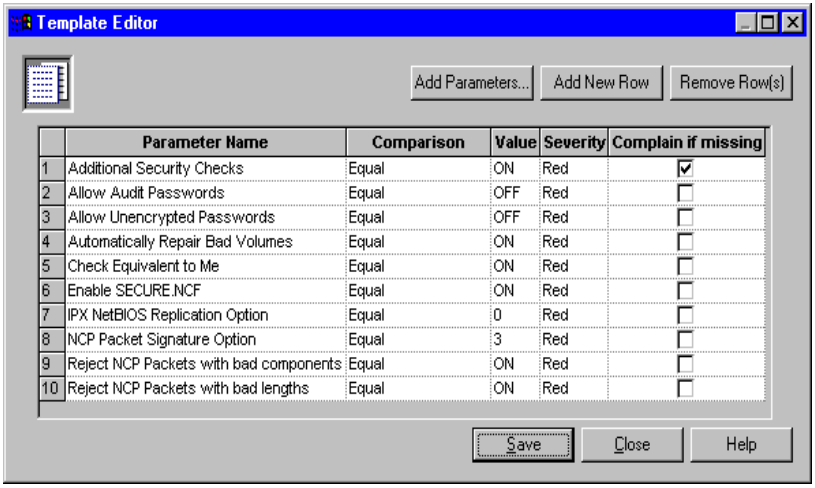
Symantec ESM's default c2.nws template file defines parameter settings that are required to certify a NetWare server as C2-compliant.

You can update an existing NW Console Parameters template or create a new NW Console Parameters template using the Template Editor in the Symantec ESM Enterprise Console.

To edit the NW Console Parameters template

1 Choose an option:

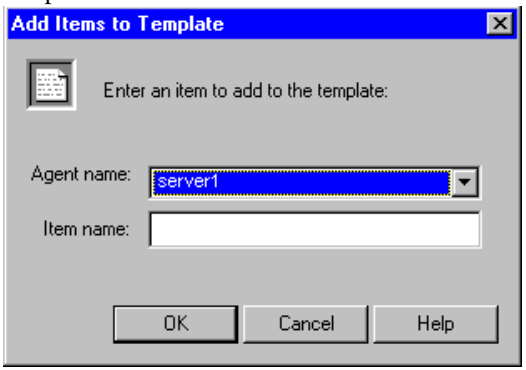
- To open an existing NW Console Parameters template for editing, double-click the template name in the Templates branch of the Enterprise tree.


Template Editor
Add Parameters...
Add New Row
Remove Row(s)
Parameter Name
Comparison
Value
Severity
Complain if missing
1 Additional Security Checks Equal ON Red
2 Allow Audit Passwords Equal OFF Red
3 Allow Unencrypted Passwords Equal OFF Red
4 Automatically Repair Bad Volumes Equal ON Red
5 Check Equivalent to Me Equal ON Red
6 Enable SECURE.NCF Equal ON Red
7 IPX NetBIOS Replication Option Equal 0 Red
8 NCP Packet Signature Option Equal 3 Red
9 Reject NCP Packets with bad components Equal ON Red
10 Reject NCP Packets with bad lengths Equal ON Red
Save
Close
Help

- To create a new template:
  - Right-click **Templates** in the enterprise tree.
  - Select **New** in the context menu, then select **NW Console Params - NetWare/NDS** from the list of available template types.
  - Enter a **Template file name** of eight characters or less, but do not add a file extension.
  - Click **OK** to create the template and access the Template Editor.

2 Use the control buttons in the Template Editor to load an agent's current parameter settings into the template, to add a new row and manually enter a new parameter setting, or to remove selected rows from the template.

- Click **Add Parameters** to open the Add Items to Template dialog box and specify the parameter settings that you want to load into the template.



- Select the agent name of the server where the parameter setting is located.
- Enter the name of the parameter you want to load into the template in the Item name text box. You can use asterisk (*) and question mark (?) characters as wildcards to specify multiple parameter settings.
- Click **Add Row** to add a blank row to the template and manually enter a new parameter and its required settings.
- Select one or more existing rows in the template and click **Remove Rows** to delete the selected parameters from the template.

3 Enter the name of the parameter that you want to monitor in the **Parameter Name** field. The name must be spelled exactly as it appears through the console SET command. Capitalization may vary since these parameters are not case sensitive.

4 Select the option from the Comparison context menu that determines how the agent's current parameter setting must compare with the template's Value entry. Valid options include:

Comparison value	Explanation
Equal	Setting must match template value
Not Equal	Setting must not match template value
Less Than	Setting must be less than template value
Less Than or Equal	Setting must be less than or equal to template value

Comparison value	Explanation
Greater Than	Setting must be greater than template value
Greater Than or Equal	Setting must be greater than or equal to template value
Empty String	String setting must be empty
Non-empty String	String setting must not be empty
Contain String	String setting must contain template value
Not in String	String setting must not contain template value

5 Enter the value that the agent's parameter setting will be compared with in the template's Value field.

6 Select the option from the Severity context menu that describes the security level of the message that ESM will generate if the agent's parameter setting does not meet template requirements. Valid options include:

Severity value	Explanation
Red	Very severe
Yellow	Causes concern
Green	Informational

7 Select the **Complain if missing** check box only if the specified parameter setting is required to exist on the agent server. Clearing this check box does not disable the comparisons with template values, but it does suppress the red-level Missing console parameters message that is generated by Symantec ESM's security check.

8 Click **Save** to save your template editing changes, and click **Close** to exit the Template Editor.

For more information about the security check that uses the NW Console Params template, see "NetWare console parameters" on page 110.

Server module: All objects in the tree will be considered

NetWare/NDS modules are divided into two categories:

- NDS module checks for security problems involving NDS objects.
- Server module checks for security problems involving server resources.

This server module checks access to server resources against objects in the entire NDS tree.

System Auditing module

The System Auditing module reports whether auditing is enabled and configured properly on NDS Volume and Container class objects.

Note: The System Auditing module is not supported on NetWare 6.x. The checks in this module correspond to functionality that is no longer available in NetWare 6.x.

Volume auditing enabled

This check reports selected events in local volumes that are not being audited.

NetWare/NDS servers disable volume auditing by default. Enable auditing of critical events for each local volume. Auditing provides valuable information in the event of a break-in.

Use the name list to specify the volumes that are to be excluded or included in the check.

Before this check can report whether selected events are being audited, you must enable the corresponding event keys in the related option lists. The option lists that are used by this check are:

- Accounting events enabled
- Extended attribute events enabled
- File events enabled (global)
- File events enabled (user and file/directory)
- File events enabled (user or file/directory)
- Message events enabled
- QMS events enabled
- Server events enabled
- User events enabled

The check returns the following messages:

Table 5-26 Volume auditing enabled messages

Message	Title	Class
ALREADY_IN_USE	Unable to get auditing status of object, audit or connection already in use	2
EVENT_DUPLICATE	File event was selected in multiple checks	4
NCP_NOT_SUPPORTED	Unable to get auditing status of object, NCP is not supported on 'Host Server'	2
NO_VOLUME_AUDITING	Volume Auditing disabled	2
VOL_EVENT_OFF	Required volume auditing event is not enabled	2

For optimal security, enable critical auditing events on all server volumes.

Accounting events enabled

Use this option to select the accounting events that are checked by the Volume auditing enabled check. View the accounting event keys by selecting this option in the Symantec ESM console.

Extended attribute events enabled

Use this option to select the extended attribute events that are checked by the Volume auditing enabled check. View the extended attribute event keys by selecting this option in the Symantec ESM console.

File events enabled (global)

Use this option to select the global file events that are checked by the Volume auditing enabled check. View the global file event keys by selecting this option in the Symantec ESM console.

File events enabled (user or file/directory)

Use this option to select the user or file/directory events that are checked by the Volume auditing enabled check. View the user or file/directory event keys by selecting this option in the Symantec ESM console.

File events enabled (user and file/directory)

Use this option to select the user and file/directory events that are checked by the Volume auditing enabled check. View the user and file/directory event keys by selecting this option in the Symantec ESM console.

Message events enabled

Use this option to select the message events that are checked by the Volume auditing enabled check. View the message event keys by selecting this option in the Symantec ESM console.

QMS events enabled

Use this option to select the QMS events that are checked by the Volume auditing enabled check. View the QMS event keys by selecting this option in the Symantec ESM console.

Server events enabled

Use this option to select the server events that are checked by the Volume auditing enabled check. View the server event keys by selecting this option in the Symantec ESM console.

The following server events are available only for NetWare 5.0 and higher:

- Graded authentication failed access control service
- Graded authentication get volume access label
- Graded authentication get connection range
- Graded authentication set volume access label

User events enabled

Use this option to select the user events that are checked by the Volume auditing enabled check. View the user event keys by selecting this option in the Symantec ESM console.

Files/directories for auditing

This check reports specified files in local volumes that are not being audited.

Use the name list to specify files that are included in the check. If you specify a directory, the check reports any files in the directory that are not being audited.

The check returns the following message:

Table 5-27 Files and directories flagged for auditing message

Message	Title	Class
FILE_NOT_AUDITED	File is not flagged for auditing	2

Enable auditing on all critical files.

Container auditing enabled

This check reports Container objects in the agent's context list that are not being audited.

NetWare/NDS servers disable Container auditing by default. Enable Container auditing for all of the Container objects. Auditing provides valuable information during and after a break-in.

Note: You must exit AUDITCON completely before running this security check. Otherwise, the check cannot read Container auditing configuration headers. The Alt-F10 keys provide a quick way to exit AUDITCON from anywhere.

Use the name list to specify Containers that are to be excluded or included in the check.

You must enable the corresponding event keys in the NDS Container events enabled option list before the check can report whether specific events are being audited.

The check returns the following messages:

Table 5-28 Container auditing enabled messages

Message	Title	Class
NO_CONTAINER_ AUDITING	Container auditing disabled	2
DS_EVENT_OFF	Required Container auditing event is not enabled	2

Enable auditing on all critical Containers.

NDS Container events enabled

Use this option to select the Container events that are to be checked by the Container auditing enabled check. Container events are listed in the Disabled keys name list.

Users for auditing

This check reports user objects in the agent's context list that are not being audited.

Use the name list to specify users that are to be excluded or included in the check.

The check returns the following message:

Table 5-29 Users flagged for auditing message

Message	Title	Class
USER_NOT_AUDITED	User is not flagged for auditing	2

Dual module: Some NDS and some server checks

NetWare/NDS modules are divided into two categories:

- NDS module checks examine NDS objects for security problems
- Server module checks examine server resources for security problems

NDS modules are given a list of NDS contexts to check at installation. You can change the agent's context list with the ESMSETUP.NLM setup program.

This module checks Containers and users within the agent context list as well as volumes, directories, and files on the local server.

Chapter 6

Checking system files and directories

This chapter includes the following topics:

- File Attributes module
- File Find (Queries) module
- File Access (Queries) module
- File Information (Queries) module

These modules check system files and directories for unauthorized access, modification, and tampering.

This chapter also lists the messages that are returned by individual security checks. For common messages that are returned by multiple security checks, see "Reviewing common messages" on page 45.

To learn how to use name lists, see "Editing name lists" on page 35.

File Attributes module

The File Attributes module compares system file attributes with the attributes that are specified in File templates and reports differences that could represent unauthorized use or tampering.

The module also creates and maintains a snapshot file on each Symantec ESM agent server to detect system file changes. Most system files should not change during normal use. Changes that are not due to software updates by the system administrator could represent a security problem.

Symantec ESM provides default File templates for NetWare operating system versions that were available when this security update was developed. Update these templates to match the operating system versions that are installed on your systems before running the File Attributes module.

See "Editing the File template" on page 130.

Updateable File Attributes messages

The NetWare File Attributes module has 3 security checks that return snapshot-updateable messages.

Snapshot-updateable messages let you update snapshots to match current values for the agent system. These messages display the letters SU in the Updateable/Correctable column of the console grid.

Run the module once to create the agent snapshot file before you run the module to look for security weaknesses.

Table 6-1 Updateable/correctable File Attributes messages

Security check	Code	Message name
File creation time	SU	DIFFSNAP
File ownership	C	DIFFOWN
File attributes	C	DIFFATTRIB

Template file list

Use this option to enable and disable the File template files that are used for file attributes checking.

The File Attributes module can generate any of the following messages as it examines template files. These messages are generated before the module runs any of the security checks that are documented below.

The check returns the following messages:

Table 6-2 Common File attributes messages

Message	Title	Class
NOTEMPLATES	No template files specified	4
FORBIDWC	Forbidden wild card file exists	4
NOEXISTWC	Mandatory wild card entry	0
NOEXIST	Mandatory file does not exist	4

The FORBIDWC, NOEXISTWC, and NOEXIST messages correspond to different conditions that exist in the template files:

- A wild card pattern, specified as FORBIDDEN, that matches a current file.
  Improve your security by either changing the requirement for this pattern in the template or removing the file from your system.
- A wild card pattern, specified as MANDATORY, that is not a valid measure for checking.
  Improve your security by placing full file and path names in the template for items that are MANDATORY.
- A file name, specified as MANDATORY, that does not exist on the system.
  Improve your security by either changing the requirement for this file in the template or adding the missing file to your system.

File ownership

This check verifies the proper ownership of files using the values that are specified in your templates.

The check returns the following message:

Table 6-3 File ownership message

Message	Title	Class
DIFFOWN	Different file ownership	2

Changes in file ownership that were not made by the system administrator may represent a serious security concern.

For optimal security, correct the file ownership and verify that the file has not been modified by any unauthorized persons. If an unauthorized modification has occurred, restore the file from the distribution media or from a backup as quickly as possible.

File attributes

This check verifies file attributes using the values specified in your templates.

The check returns the following message.

Table 6-4 File attributes message

Message	Title	Class
DIFFATTRIB	Different file attributes	2

Changes in file attributes may indicate tampering. If one or more of the file attributes do not match the attributes that are specified in the File template, you should determine the cause of the mismatch and take appropriate action.

If a change was made to the attributes of a file and that change was made by the system administrator, you should update the File template with the new attributes.

If a change is not due to an update that was performed by the system administrator, it might represent an unauthorized file attributes modification. This is a serious security concern. Change the file attributes back to their previous values.

Changed files (creation time)

This check verifies the creation times of files that have the Creation Time option checked in their associated template records. The creation time is compared to the value stored in the snapshot file. The snapshot file is created and stored on the agent the first time the File Attributes module is run.

This check returns the following message.

Table 6-5 File creation time message

Message	Title	Class
DIFFSNAP	File attributes have changed	2

Changes to the creation time of files may represent a serious security concern. If this change is due to an update that was performed by the system administrator, you should update the agent's snapshot.

If this change was not made by the system administrator, you should restore the file either from a backup or from the original distribution media.

Note: Because it is possible for an intruder to modify a file without changing the file creation time, you should also run CRC and/or MD5 checksum checks to ensure file integrity.

Changed files (modification time)

This check verifies the modification times of files that have the Modification Time option checked in their associated template records. The modification time is compared to the value stored in the snapshot file. The snapshot file is created and stored on the agent the first time the File Attributes module is run.

This check returns the following message:

Table 6-6 File modification time message

Message	Title	Class
DIFFSNAP	File attributes have changed	2

Changes to the modification times of files may represent a serious security concern. If this change was made by the system administrator, you should update the agent's snapshot.

If this change is not due to an update that was performed by the system administrator, you should restore the file from a backup or from the original distribution media.

Note: Because it is possible for an intruder to modify a file without changing the modification time, you should also run CRC and/or MD5 checksum checks to ensure file integrity.

Changed files (size)

This check verifies the sizes of files that have the Size option checked in their associated template records. The file size is compared to the value that is stored in the snapshot file. The snapshot file is created and stored on the agent the first time the File Attributes module is run.

This check returns the following message:

Table 6-7 File size message

Message	Title	Class
DIFFSNAP	File attributes have changed	2

Changes to the sizes of files may represent a serious security concern. If changes are due to an update that was performed by the system administrator, you should update the agent's snapshot.

If a change is not due to an update that was performed by the system administrator, you should restore the file either from a backup or from the original distribution media.

Note: Because it is possible for an intruder to modify a file without changing the file size, you should also run CRC and/or MD5 checksum checks to ensure file integrity.

Changed files (signature)

This check runs checksum checks on files that have the CRC, MD5, or CRC+MD5 option checked in their associated template records.

This check returns the following message.

Table 6-8 Checksum check (CRC/MD5) message

Message	Title	Class
DIFFSNAP	File attributes have changed	2

Checksum checks are the most difficult security checks for a hacker to circumvent.

Inherited rights mask

This check looks at the inherited rights filter on directories that have the Inherited Rights option selected in their associated template records. The inherited rights filter is compared to the value that is stored in the snapshot file. The snapshot file is created and stored on the agent the first time the File Attributes module is run.

This check returns the following message:

Table 6-9 Inherited rights mask message

Message	Title	Class
DIFFSNAP	File attributes have changed	2

If changes in the inherited rights filter were made by the system administrator, you should update the snapshot file.

Allow any privileged owner

This option modifies the behavior of the File ownership check. When this option is enabled, Symantec ESM accepts not only the local server as owner, but any privileged users as well, for files designated in templates with %SERVER% owners. In most situations, ownership of system files by any privileged user is acceptable. Use this option to accommodate variations in ownership between different versions or installations of the same operating system and still use the same templates.

Because most system files in NetWare are originally installed with the local server as owner, the File Attributes templates specify %SERVER% in the owner field by default. It is possible, however, for a privileged user (for example, SUPERVISOR or a SUPERVISOR equivalent) to update these files and become the owner of the updated files.

Match abbreviated names in templates

Enabling this option allows abbreviated forms of owner names to be used in template files. For example, a template owner name of "shirley" will match a file owner name of "shirley.sales.myco."

Note: Ownership problems that are found with abbreviated template owner names may not be correctable. See "Correcting agents in messages" on page 46.

Server module: NDS tree is not considered

NetWare/NDS modules are divided into two categories:

- NDS module checks for security problems involving NDS objects
- Server module checks for security problems involving server resources

This server module considers the tree only to identify owners of files.

Editing the File template

The File Attributes module uses information in File templates to check the attributes of critical files or directories. Security checks in the File Attributes module report conditions that do not match the template settings.

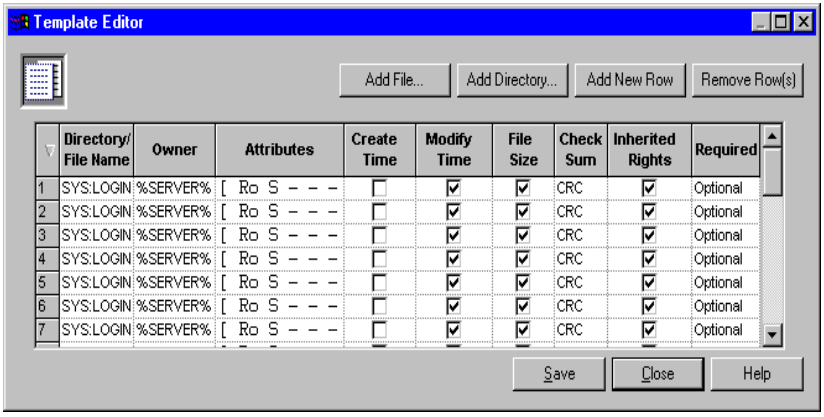
You can update an existing File template by loading the current settings for a file or directory into the template, adding new files and directories, and deleting files and directories. You can also create new File templates to monitor other sensitive files or directories.

To edit the File template

1 Do one of the following:

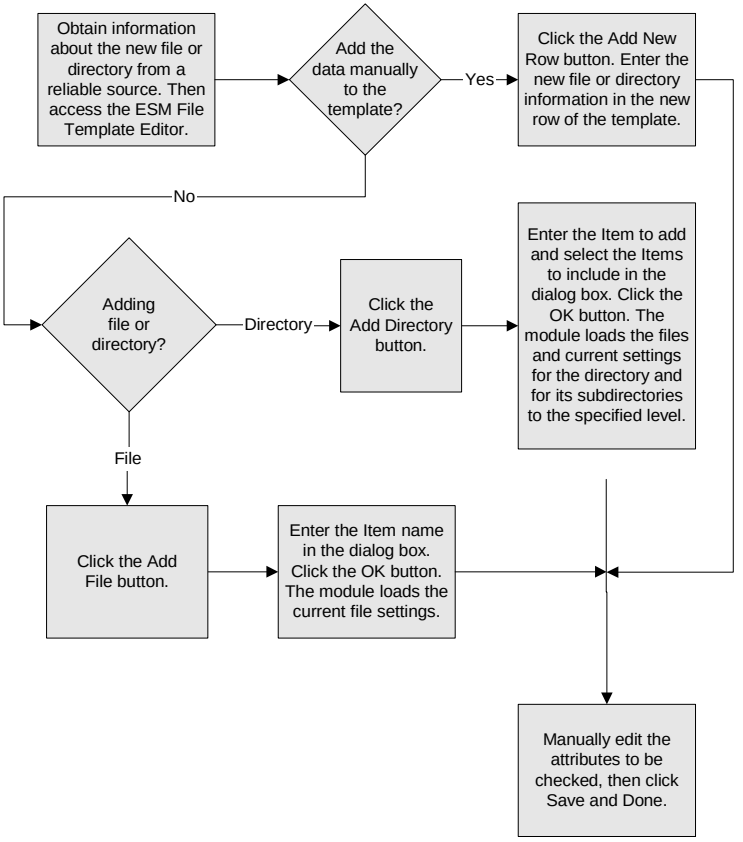
- To open an existing template for editing in the Template Editor, double-click the template name in the Templates branch of the Enterprise tree.

Figure 6-1 File template


Template Editor
Add File...
Add Directory...
Add New Row
Remove Row(s)
Directory/ File Name
Owner
Attributes
Create Time
Modify Time
File Size
Check Sum
Inherited Rights
Required
1 SYS:LOGIN %SERVER% [Ro S - - - CRC Optional
2 SYS:LOGIN %SERVER% [Ro S - - - CRC Optional
3 SYS:LOGIN %SERVER% [Ro S - - - CRC Optional
4 SYS:LOGIN %SERVER% [Ro S - - - CRC Optional
5 SYS:LOGIN %SERVER% [Ro S - - - CRC Optional
6 SYS:LOGIN %SERVER% [Ro S - - - CRC Optional
7 SYS:LOGIN %SERVER% [Ro S - - - CRC Optional
Save
Close
Help

- To create a new template:
  - Right-click **Templates** in the Enterprise tree and select **New**.
  - Select **File - NetWare/NDS** from the list of available template types.
  - Enter a **Template file name** of eight characters or less but do not add a file extension.
  - Click **OK** to create the template and access the Template Editor.

2 To add a file or directory to the File template, complete the steps illustrated below:


Obtain information about the new file or directory from a reliable source. Then access the ESM File Template Editor.
Add the data manually to the template?
Yes
Click the Add New Row button. Enter the new file or directory information in the new row of the template.
No
Adding file or directory?
Directory
Click the Add Directory button.
Enter the Item to add and select the Items to include in the dialog box. Click the OK button. The module loads the files and current settings for the directory and for its subdirectories to the specified level.
File
Click the Add File button.
Enter the Item name in the dialog box. Click the OK button. The module loads the current file settings.
Manually edit the attributes to be checked, then click Save and Done.

To automatically add a new file to the File template

1. Click **Add File** or **Add Directory** and enter the required information. For example, to add the Symantec ESM Manager database file to the template, type:

   ```
   SYS:SYMANTEC\ESM\ CONFIG\MANAGER.DAT.
   ```

2. Click **OK** and Symantec ESM loads current file settings for the specified file or directory, and subdirectories to the specified level, into the template. Symantec ESM also enables all check boxes by default.
3. Edit the new items in the template to conform with your company's security policy.
4. Click **Save** to save your changes to the File template, and click **Done** to exit the Template Editor.

To manually add a new file to the File template

1. Click **Add Row** to add a blank row to the template.
2. Type string values for the Directory or File Name and the Owner fields.

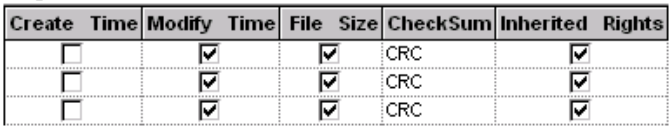
Directory/File Name	Owner
SYS:LOGIN\ATTACH.BAT	%SERVER%
SYS:LOGIN\CMPQ_RUN.OVL	%SERVER%
SYS:LOGIN\CX.EXE	%SERVER%

   Owner can be %Server%, %Privileged%, or a fully distinguished object name.

3. Type the Attributes flags for the directory or file. Flags must be spaced as shown.

Attributes
[Ro S - - - -- - - -- -- -- DI RI]
[Ro S - - - -- - - -- -- -- DI RI]
[Ro S - - - -- - - -- -- -- DI RI]

4 Check the file values that Symantec ESM compares to values in the agent's snapshot file.



Create Time	Modify Time	File Size	CheckSum	Inherited Rights
☐	☑	☑	CRC	☑
☐	☑	☑	CRC	☑
☐	☑	☑	CRC	☑

When you check a check box in the File template and enable the related security check in the File Attributes module, the module compares the current value of the file on the agent system with the value stored in the agent's snapshot file and reports differences.

5 Select the type of file signature, if any, from the CheckSum context menu that you want the module to calculate and compare against snapshot values.

Valid options include:

- **None** -- No signature
- **CRC** -- 16 bit signature
- **MD5** -- 128 bit signature
- **CRC+MD5** -- Combined signatures

6 Specify whether the file must exist, the file must not exist, or file existence is optional by checking the appropriate option in the **Required** context menu.

7 Click **Save** to save your changes to the File template, and click **Done** to exit the Template Editor.

Editing File Attributes

Symantec ESM monitors these file and directory Attributes flags:

Table 6-10 File or directory attribute flags

Flag	Description
A	Archive
Di	Delete inhibit
H	Hidden
P	Purge
Ri	Rename inhibit
Ro	Read-only
Rw	Read/write
S	Sharable
Sy	System
T	Transactional
X	Execute only

The Attributes flags must appear in the File template in the order shown below. You must separate flags with spaces and enclose each row of flags within spaces and brackets. The first column after the bracket and space must contain either Ro or Rw. The remaining columns must contain either a value or a dash.

Table 6-11 Template attribute flag sequence

[	Ro/Rw	S	A	X	H	Sy	T	P	--	--	Ci	Di	Ri	]
[	Ro	S	-	-	-	--	-	-	--	--	-	Di	Ri	]

File Access (Queries) module

This module examines the permissions of user-specified files and identifies user accounts that can access the files as specified by module options. It also checks to verify that only policy-designated users may modify the files.

Excessive file access

This check looks at system directories (such as SYS:\, SYS:SYSTEM, SYS:PUBLIC, etc.) and reports user accounts that have been given more rights than Novell recommends.

Novell's recommended rights include:

Table 6-12 Novell recommended rights

Directory	Rights
SYS:\	[ ]
SYS:SYSTEM	[ ]
SYS:LOGIN	[R F]
SYS:PUBLIC	[R F]
SYS:ETC	[ ]
SYS:QUEUES	[ ]

This check returns the following message:

Table 6-13 Excessive file access message

Message	Title	Class
EXCESS_RIGHTS	Accounts with excessive system directory rights	2

Accounts with Effective Rights that are greater than those recommended by Novell could be used to replace or modify widely-used common files in a system directory (like SYS:SYSTEM, SYS:LOGIN, SYS:PUBLIC, etc.). Ensure that extra rights to these directories are strictly limited to a small number of trusted users.

Access to ESM files

This check reports users who have account access to Symantec ESM files.

The check returns the following message:

Table 6-14 Access to ESM files message

Message	Title	Class
EXCESS_RIGHTS_ESM	Accounts with access to ESM directory	2

Access to the Symantec ESM directory gives users potential access to executable and snapshot files. An intruder could use one of these accounts to hide indications of a security problem, replace an executable with a Trojan Horse program that could later be run with an admin equivalent, or gain knowledge of security weaknesses that are detected by Symantec ESM.

Limit access to the Symantec ESM directory to Symantec ESM privileged accounts.

System directories with non-recommended rights masks

This check searches server system directories (like SYS:, SYS:SYSTEM, etc.) for inherited rights filters that allow more access than Novell recommends.

Novell's recommended rights include:

Table 6-15 Novell recommended inherited rights filters

Directory	IRM
SYS:\	[ ]
SYS:SYSTEM	[ ]
SYS:LOGIN	[SR]
SYS:PUBLIC	[SR W C E M F A]
SYS:ETC	[SR W C E M F A]
SYS:QUEUES	[S]

This check returns the following message:

Table 6-16 Non-recommended rights message

Message	Title	Class
NON_RECOMMENDED_IRM	Non-recommended inheritance filter	2

Inherited rights that override Novell's recommendations could present a security risk. Review inherited rights and limit those that are in violation of your security policy.

The SYS:SYSTEM directory, unlike other directories on your file system, has an inheritance filter placed on it.

Server module: All objects in the tree will be considered

NetWare/NDS modules are divided into two categories:

- NDS module checks for security problems involving NDS objects.
- Server module checks for security problems involving server resources.

This server module checks access to server resources against objects in the entire NDS tree.

File Find (Queries) module

The File Find module identifies sensitive files that are duplicated on the file server in areas where they should not be located. The module also identifies files that are marked as system or hidden.

Duplicate system files

This check reports files from SYS:SYSTEM that are duplicated elsewhere on the file server. You can use the file list to specify file names that are excluded from the check. Do not include full path names in the file list.

This check returns the following message:

Table 6-17 Duplicate system files message

Message	Title	Class
SYSTEM_IN_OTHER	System file duplicated elsewhere	3

Trojan Horse programs are often placed in areas that are searched before the system area. This action could cause a user to inadvertently execute the Trojan Horse program instead of the system program.

Investigate all reports of duplicate files. Add any system files that can safely be duplicated to the excluded file list.

Hidden and system files

This check reports files and directories with the [H]idden or [S]ystem flags set. Use the file list to specify full pathnames (including the volume name) for files that are excluded from the check.

This check returns the following messages:

Table 6-18 Hidden and system file messages

Message	Title	Class
FILE_HIDDEN	File is hidden	2
FILE_SYSTEM	File has system attribute	0

Files that have been set with the system attribute are not ordinarily a problem, but Symantec ESM reports this condition for your information.

Trojan Horse programs, which are placed in an area that is searched before the system area, may be inadvertently activated.

Investigate all reports of duplicate files. System files that can safely be duplicated can be added to the excluded file list.

Hidden files and directories are sometimes used to hide unauthorized use of the directory tree. Ensure that each instance of a hidden file is investigated and that those files that are authorized to be hidden are placed in the excluded file list.

Duplicate non-system files

This check reports files that are duplicated elsewhere on the file server.

The file list lets you specify the file names that are checked. If you specify a full file path name, the check lists files with the same name that are located elsewhere. If you specify a file name without a directory path, then all file locations are listed when more than one instance of the file is located.

This check returns the following message:

Table 6-19 Duplicate non-system files message

Message	Title	Class
USER_DEFINE_BASELINE	File duplicated	1

Duplicated non-system files could indicate a security problem. All reports of duplicate files should be investigated.

Server module: NDS tree is not considered

NetWare/NDS modules are divided into two categories:

- NDS module checks for security problems involving NDS objects.
- Server module checks for security problems involving server resources.

This server module considers the tree only to identify owners of files.

File Information (Queries) module

The File Information module generates a report that includes selected users and their rights to specified directories and files. Depending on the keywords that are enabled in the Items to report option, the module reports effective rights, trustee rights, and/or inherited rights for selected users.

Items to report

Use this option to choose the user rights to specified files and directories that are included in File Information reports. Select the user rights from the keyword list. Possible selections include effective rights, trustee rights, and inherited rights.

The check returns the following messages:

Table 6-20 Information report messages

Message	Title	Class
SYSTEM_NCS	No checks selected	0
SYSTEM_IRM	Inherited Rights Mask	0
SYSTEM_EF	Effective Rights	0
SYSTEM_TR	Trustee Rights	0

File Information queries are designed to produce information-only reports. No security actions are recommended.

Effective rights mask

Use this option to enable or disable the keywords that define the privileges that are reported as effective rights in File Information query results.

Possible selections and their default settings in the check's keyword list include:

Table 6-21 ESM default effective rights settings

Effective Right	Default Setting	Effective Right	Default Setting
Access Control	Enabled	Supervisor	Enabled
Create	Disabled	Erase	Disabled
File Scan	Disabled	Modify	Disabled
Read	Disabled	Write	Disabled

The module returns the following message when Effective Rights is enabled in the Items to report option but all keywords are disabled in the Effective rights mask option:

Table 6-22 Empty rights mask message

Message	Title	Class
EMPTY_MASK	Empty Rights Mask--Check Skipped	0

Users/groups to check

Use this option to specify the users and groups to include or exclude in reported File Information query results.

The check returns the following message:

Table 6-23 Users/groups to check message

Message	Title	Class
SYSTEM_NUSL	No users selected	0

Files/directories to check

Use this option to specify the files and/or directories to include in reported File Information query results. The following NetWare directories are included in the option's default file list:

- SYS:ETC
- SYS:LOGIN
- SYS:MAIL
- SYS:PUBLIC
- SYS:SYSTEM

The check returns the following messages:

Table 6-24 Files/directories to check messages

Message	Title	Class
SYSTEM_NDOF	No directories or files selected	0
SYSTEM_BFN	Invalid file name	0

Directories only

When this option is enabled, the module reports selected user rights information for directories only and excludes files from reported query results.

Walk subdirectories

When this option is enabled, the module reports selected user rights information for all subdirectories of directories that are specified by the Files/directories to check option. When this option is disabled, only the specified directories are included in reported query results.

Server module: All objects in the tree will be considered

NetWare/NDS modules are divided into two categories:

- NDS module checks for security problems involving NDS objects.
- Server module checks for security problems involving server resources.

This server module checks access to server resources against objects in the entire NDS tree.

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Symantec ESM Security Update

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